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Applicant(s): Pillar et al.

Title: REFUSE VEHICLE CONTROL SYSTEM AND METHOD

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DECLARATION UNDER 37 C.F.R. § 1.131

Commissioner for Patents Washington, D.C. 20231

Sir:

We, Duane Pillar and William Woolman, state and declare that:

- We are the inventors of claims 1-7, 13, 14, 31-35, 46-48 and 52-68 of the patent application identified above.
- 2. Prior to May 15, 2003, we conceived of the invention described and claimed in claims 1-7, 13, 14, 31-35, 46-48 and 52-68 of the above-referenced application as evidenced by the attached Exhibits A, B-1, B-2, C, D, E, F-1, F-2, G, H, I, J and K referenced herein.
- 3. On March 4, 2003, Foley & Lardner LLP was contracted to draft a patent application for the invention described and claimed in claims 1-7, 13, 14, 31-35, 46-48 and 52-68 of the above-referenced application as evidenced by the attached Exhibit L. Exhibit L is a Foley & Lardner LLP patent application approval form.
- 4. Foley and Lardner assigned attorney Scott C. Nielson to draft the abovereferenced application as evidenced by the attached Exhibit M. Mr. Nielson was diligent in compiling the required information for the patent application and drafting the patent application

as evidenced by the attached Exhibits M, N, O and Q. Exhibit M is attorney Scott C. Nielson's declaration. Exhibit N is the billing records for patent application 10/668,002. Exhibit O is the history of the patent application file (File Number 1,447,005). Exhibit Q is the history of a memo to file regarding foreign filing (File Number 1,415,189).

- 6. On October 10, 2001, the IO and Cable List From Geesink document (Exhibit R) was created as evidenced by Exhibit S. The IO and Cable List From Geesink document was continuously modified to incorporate progress being made to reduce to practice the invention described and claimed in claims 1-7, 13, 14, 31-35, 46-48 and 52-68 of the above-referenced application until October 2, 2003 as evidenced by the attached Exhibit S.
- On September 22, 2003, the invention described and claimed in claims 1-7, 13,
 31-35, 46-48 and 52-68 of the above-referenced application was constructively reduced to practice by filing patent application number 10/668,002.
 - 8. The conception and reduction to practice occurred in the United States.
- The Exhibits A, B-1, B-2, C, D, E, F-1, F-2, G, H, I, J and K were created by Gert Meilink. Gert Meilink is an independent electrical contractor. Gert Meilink is not an inventor.
- Gert Meilink was contracted by Geesink which is located in Netherlands to create Exhibits A, B-1, B-2, C, D, E, F-1, F-2, G, H, I, J and K. Geesink is a subsidiary of Oshkosh Truck Corporation.
- We directed the development of Exhibits A, B-1, B-2, C, D, E, F-1, F-2, G, H, I, J and K prior to May 15, 2003.
 - 12. Exhibit A is a general description of a loading refuse vehicle which states:

The control system will incorporate proprietary extended CAN (J1939/1 & /2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display and numerous body and cab mounted switches will be used for system operation. This equipment shall be exposed to various

environmental extremes (i.e. High Moisture Exposure, Low/High Temperature, Shock, Vibration, etc.). It is further intended that the VIM and display will be designed as a Line Replaceable Unit (LRU) for easy field replacement/servicing.

13. Exhibits B-1 and B-2 are specification sheets for the loading refuse vehicle.

B-1 states: The chassis interface consists of a number of signals.

B-2 states: When the signal is "high" the controlling system (PLC) knows that the engine of the truck is running, this engine delivers by use of the PTO (Power Take Off) the necessary hydraulic energy.

14. Exhibit C is a specification sheet for the loading refuse vehicle. Exhibit C. states:

Releasing the brake pedal and/or the clutch pedal results in stopping any operation of the body.

15. Exhibit D is a specification sheet for the loading refuse vehicle. Exhibit D states:

Signal "Speed > 10km/h" comes from the tachnograph. This signal becomes "high" when the speed is larger than 10 km/h. When the drive signal becomes "high" the controlling system ensures that the body and lifting device cannot be started.

- 16. Exhibit E is a specification sheet for the loading refuse vehicle and shows when the vehicle is in reverse the output device is disabled.
- Exhibits F-1 and F-2 are specification sheets for the loading refuse vehicle.
 They show a refuse loader, a refuse compactor and a tailgate.
 - 18. Exhibit G is a specification sheet for the loading refuse vehicle. It states:

As soon as the vehicle starts driving, an already started compaction cycle will be completed. If the function start

"continuous" is activated, it will stop after the compaction mechanism has finished its cycle.

- Exhibit H is a specification sheet for the loading refuse vehicle. It shows an emergency circuit configured to operate under numerous conditions.
 - 20. Exhibit I is a specification sheet for the loading refuse vehicle. It states:

In this configuration the signal "D" (drive) is a combined signal of the signal "parking brake" and the "neutral" signal of the automatic gear box. Signal "D" drive is "high" if: 1) the automatic gear box is in Drive; 2) the automatic gear box is in Neutral and the Parking brake is not activated. Signal "D" drive is "low" if: 1) the automatic gear box is in Neutral and the Parking brake is activated.

21. Exhibit J is a specification sheet for the loading refuse vehicle. It states:

By this function the automatic gearbox is put into the Neutral position when the brake pedal is applied by the driver. As soon as the driving speed of the vehicle is lower than 5 km/h the gearbox is shifted into Neutral. When the Neutral position is reached the body is allowed to go into operation.

22. Exhibit K is a specification sheet for the loading refuse vehicle. It states:

To realize this option, the chassis needs to be ordered with a modification so that when the signal "Auto-neutral" is "high" the automatic gearbox is shifted into Neutral after the brake pedal is operated and the driving speed is lower than 5 km/h. Additional to the "Auto-neutral" option it is needed that after releasing the brake pedal the automatic gearbox is shifted into Drive.

The following claim charts provide a more specific correlation between Exhibits
 A, B-1, B-2, C, D, E, F-1, F-2, G, H, I, J and K and claims 1-7, 13, 14, 31-35, 46-48 and 52-68

of the patent application identified above. Exhibits A, B-1, B-2, C, D, E, F-1, F-2, G, H, I, J and K are product specifications.

Claim 1	
Text of Claim	Evidence of Reduction to Practice
A refuse vehicle comprising:	Exhibit A states "[t]he GPM IIe is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers."
a transmission; and	Exhibits B-1 and C. Exhibit B states "[t]his signal initiates that the engine of the truck is running." Exhibit C states "when the gearbox of the vehicle is not in its neutral position"
a control system which comprises:	Exhibit A states "[t]he control system will incorporate proprietary extended"
a plurality of microprocessor based interface modules;	Exhibit A states 'f[the control system will incorporate proprietary extended CAN (J1939/1 & //2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."
a communication network configured to interconnect the plurality of interface modules; and	Exhibit A states "[t]he control system will incorporate proprietary extended CAN (J1939/1 & /2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."
at least one output device;	Exhibit A states "[a] VIM (Vehicle Interface Module), various Input and Output modules"
wherein the control system is configured to immediately disable the output device when the transmission is put into gear.	Exhibit C states 'f[the driver of the vehicle needs only to apply the brake pedal and/or the clutch pedal without putting the gearbox into Neutral position, to allow the body any operation. During the collection of refuse the driver needs to keep the brake pedal and/or clutch pedal activated. Releasing the brake pedal and/or the clutch pedal results in stopping any operation of the body."

Claim 2	
Text of Claim	Evidence of Reduction to Practice
The refuse vehicle of claim 1 wherein the control system is configured to, when the transmission is in gear, enable the output device when a brake is engaged and/or a clutch is disengaged.	Exhibits C and I. Exhibit C states '[t]the driver of the vehicle needs only to apply the brake pedal and/or the clutch pedal without putting the gearbox into Neutral position, to allow the body any operation. During the collection of refuse the driver needs to keep the brake pedal and/or clutch pedal activated. Releasing the brake pedal and/or the clutch pedal results in stopping any operation of the body. Exhibit I states '[f]in this configuration the signal 'D'

(drive) is a combined signal of the signal "parking brake" and the "neutral" signal of the automatic gear box. Signal "D" drive is "high" if: 1) the
automatic gear box is in Drive; 2) the automatic gear box is in Neutral and the Parking brake is not activated. Signal "D" drive is "low" if: 1) the automatic gear box is in Neutral and the Parking brake is activated.

Claim 3	
Text of Claim	Evidence of Reduction to Practice
The refuse vehicle of claim 2 wherein the transmission is a manual transmission.	Exhibit C states "[t]he driver of the vehicle needs only to apply the brake pedal and/or the clutch pedal without putting the gearbox into Neutral position, to allow the body any operation."

Claim 4	
Text of Claim	Evidence of Reduction to Practice
The refuse vehicle of claim 1 further comprising a chassis which includes the transmission; and a body; wherein the output device pertains to the body of the refuse vehicle.	Exhibits A, B-1 and C. Exhibit A states "[t]he GPM lle is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers." Exhibit B states "[t]his signal initiates that the engine of the truck is running." Exhibit C states "when the gearbox of the vehicle is not in its neutral position"

ſ	Claim 5	
ſ	Text of Claim	Evidence of Reduction to Practice
	The refuse vehicle of claim 1 wherein the output device receives power from a power takeoff.	Exhibit B-2 states "(when the signal is "high" the controlling system (PLC) knows that the engine of the truck is running, this engine delivers by use of the PTO (Power Take Off) the necessary hydraulic energy."

Claim 6	
Text of Claim	Evidence of Reduction to Practice
The refuse vehicle of claim 1 wherein the control system is configured to enable the output device by moving the transmission out of gear when a brake is engaged and the refuse vehicle is not moving faster than a threshold speed.	Exhibit J states "[bly this function the automatic gearbox is put into the Neutral position when the brake pedal is applied by the driver. As soon as the driving speed of the vehicle is lower than 5 kml/t the gearbox is shiffed into Neutral. When the Neutral position is reached the body is allowed to go into operation."

Claim 7		
Text of Claim	Evidence of Reduction to Practice	
The refuse vehicle of claim 6 wherein the control system is configured to move the transmission into gear when the brake is disengaged.	Exhibit K states "[I0 realize this option, the chassis needs to be ordered with a modification so that when the signal "Auto-neutral" is "high" the automatic gearbox is shifted into Neutral after the brake pedal is operated and the driving speed is lower than 5 km/h. Additional to the "Auto-neutral" option it is needed that after releasing the brake. Pedal the automatic gearbox is shifted into Drive."	

Clai	m 13
Text of Claim	Evidence of Reduction to Practice
The refuse vehicle of claim 1 wherein the control system further comprises a plurality of input devices; a plurality of output devices; and a transmission subsystem control system which includes an electronic control unit, the transmission subsystem control system being configured to include transmission status information;	Exhibit A shows various Input and Output modules, operator display and numerous body and cab mounted switches used for system operation. Transmission status was one of the data points being monitored.
wherein each of the plurality of interface modules is coupled to respective ones of the plurality of input devices and the plurality of output devices; wherein the transmission status information is communicated from the transmission subsystem control system to at least one of the plurality of interface modules where it is stored.	Exhibit A shows various Input and Output modules, operator display and numerous body and cab mounted switches used for system operation. Transmission status was one of the data points being monitored and stored.

Clai	m 14
Text of Claim	Evidence of Reduction to Practice
A refuse vehicle comprising:	Exhibit A states "[t]he GPM IIe is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers."
a control system which comprises:	Exhibit A states "[t]he control system will incorporate proprietary extended"
a plurality of microprocessor based interface modules;	Exhibit A states "(the control system will incorporate proprietary extended CAN (J1939/1 & //2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."
a communication network configured to interconnect the plurality of interface modules; and	Exhibit A states "[t]he control system will incorporate proprietary extended CAN (J1939/1 & /2) data bus network communications to monitor

	and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."
at least one output device;	Exhibit A states "[a] VIM (Vehicle Interface Module), various Input and Output modules"
wherein the control system is configured to disable the output device when the refuse vehicle reaches a threshold speed.	Exhibit D states "Signal "Speed > 10km/h" comes from the tachnograph. This signal becomes "high" when the speed is larger than 10 km/h. When the drive signal becomes "high" the controlling system ensures that the body and lifting device cannot be started."

Claim 31	
Text of Claim	Evidence of Reduction to Practice
A refuse vehicle comprising:	Exhibit A states "[t]he GPM IIe is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers."
a control system which comprises:	Exhibit A states "[t]he control system will incorporate proprietary extended"
a plurality of microprocessor based interface modules;	Exhibit A states "[the control system will incorporate proprietary extended CAN (J1939/1 & //2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."
a communication network configured to interconnect the plurality of interface modules; and	Exhibit A states "tjthe control system will incorporate proprietary extended CAN (J1939/1 & //2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."
at least one output device;	Exhibit A states "[a] VIM (Vehicle Interface Module), various Input and Output modules"
wherein the control system is configured to disable the output device when the refuse vehicle is moving in reverse.	Exhibit E shows when the vehicle is in reverse the output device is disabled.

Claim 32	
Text of Claim	Evidence of Reduction to Practice
The refuse vehicle of claim 31 wherein the output device receives power from a power takeoff.	Exhibit B-2 states "[w]hen the signal is "high" the controlling system (PLC) knows that the engine of the truck is running, this engine delivers by use of the PTO (Power Take Off) the necessary hydraulic energy."

Claim 33	
Text of Claim	Evidence of Reduction to Practice
The refuse vehicle of claim 31 wherein the output device pertains to a group consisting of a refuse loader, a refuse loader, a tailgate, and combinations thereof.	Exhibits A, F-1 and F-2. Exhibit A states "Ifthe GPM IIe is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers." F-1 and F-2 show a refuse loader, a refuse compactor and a taliquate.

Claim 34	
Text of Claim	Evidence of Reduction to Practice
The refuse vehicle of claim 31 wherein the control system is configured to disable the output device from being actuated when the vehicle is moving in reverse, the control system being configured to enable, when the vehicle is moving in reverse, the output device to complete an operation initiated when the vehicle was not moving in reverse.	Exhibits E and G. Exhibit E shows when the vehicle is in reverse the output device is disabled. Exhibit G states "[a]s soon as the vehicle starts driving, an already started compaction cycle will bompleted. If the function start "continuous" is activated, it will stop after the compaction mechanism has finished its cycle."

Claim 35	
Text of Claim	Evidence of Reduction to Practice
The refuse vehicle of claim 31 further comprising a chassis; and a body; wherein the output device pertains to the body of the refuse vehicle.	Exhibits A, B-1 and C, Exhibit A states '[t]he GPM lie is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers." Exhibit B states '[t]his signal initiates that the engine of the truck is running. Exhibit C states 'when the gearbox of the vehicle is not in its neutral position

Claim 46	
Text of Claim	Evidence of Reduction to Practice
A refuse vehicle comprising:	Exhibit A states "[t]he GPM lle is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers."
a control system comprising:	Exhibit A states "[t]he control system will incorporate proprietary extended"
a plurality of microprocessor based interface modules; and	Exhibit A states "[t]he control system will incorporate proprietary extended CAN (J1939/1 & //2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."
a communication network configured to interconnect the plurality of interface modules;	Exhibit A states "[t]he control system will incorporate proprietary extended CAN (J1939/1 &

Claim 46	
Text of Claim	Evidence of Reduction to Practice
wherein the control system is configured to prevent the refuse loader from initiating a refuse handling operation when the vehicle is moving, the control system being configured to allow, when the vehicle is moving, the refuse loader to complete a refuse handling operation initiated when the vehicle was not moving.	/2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation. Exhibits D and G. Exhibit D states "Signal "Speed > 10kmh" comes from the tachnograph. This signal becomes "high" when the speed is larger than 10 km/h. When the drive signal becomes "high" the controlling system ensures that the body and lifting device cannot be started. Exhibit G states "lajs soon as the vehicle starts driving, an already started compaction cycle will be complete if the function start "continuous" is activated, it will stop after the compaction mechanism has finished its cycle."

Claim 47	
Text of Claim	Evidence of Reduction to Practice
The refuse vehicle of claim 46 wherein the refuse handling operation comprises compacting refuse in the refuse vehicle.	Exhibits A, F-1 and F-2. Exhibit A states "[t]he GPM Ite is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers." F-1 and F-2 show a refuse loader, a refuse compactor and a taligate.

Claim 48	
Text of Claim	Evidence of Reduction to Practice
The refuse vehicle of claim 46 wherein the refuse handling operation comprises loading refuse in the refuse vehicle.	Exhibits A, F-1 and F-2. Exhibit A states "(t)he GPM lie is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers." F-1 and F-2 show a refuse loader, a refuse compactor and a tallgate.

Claim 52	
Text of Claim	Evidence of Reduction to Practice
A refuse vehicle comprising:	Exhibit A states "[t]he GPM IIe is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers."
a control system comprising:	Exhibit A states "[t]he control system will incorporate proprietary extended"
a plurality of input devices including an emergency stop;	Exhibits A and H. Exhibit A states "[a] VIM (Vehicle Interface Module), various Input and Output modules" Exhibit H shows an emergency circuit configured to operate under numerous conditions.
a plurality of output devices;	Exhibit A. Exhibit A states "[a] VIM (Vehicle Interface Module), various Input and Output

a plurality of microprocessor based interface modules and a communication network, the plurality of interface modules being interconnected to each other by way of the communication network, each of the plurality of interface modules being coupled to respective ones of the plurality of input devices and the plurality of output devices, and the plurality of interface modules storing I/O status information for the plurality of input devices and the plurality of output devices; and	modules" Exhibit A states "[t]he control system will incorporate proprietary extended CAN (J1939/1 & I2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."
wherein the control system is configured to disable the plurality of output devices when the emergency stop is activated.	Exhibit H shows an emergency circuit configured to operate under numerous conditions.

Claim 53	
Text of Claim	Evidence of Reduction to Practice
The refuse vehicle of claim 52 further comprising a chassis; and a body; wherein the plurality of output devices include output devices pertaining to the body that receive power from a power takeoff.	Exhibits A, B-2, F-1 and F-2. Exhibit A states "tithe GPM Ile is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers." Exhibit B-2 states "(w)hen the signal is "high" the controlling system (PLC) knows that the engine of the truck is running, this engine delivers by use of the PTO (Power Take Off) the necessary hydraulic energy." F-1 and F-2 show a refuse loader, a refuse compactor and a taligate.

Claim 54	
Text of Claim	Evidence of Reduction to Practice
The refuse vehicle of claim 52 further comprising a chassis; and a body; wherein the plurality of output devices are those output devices pertaining to the body.	Exhibit B-2 states "[t]his signal is used for the GCP ((wo-compartment) body and takes care that the bin lifting frame are raised when driving faster than 5 km/h."

Claim 55	
Text of Claim	Evidence of Reduction to Practice
A method for controlling a refuse vehicle comprising:	Exhibit A states "[t]he GPM lle is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers."
disabling a plurality of output devices of the refuse vehicle when a transmission of the refuse vehicle is in gear;	Exhibit D states "Signal "Speed > 10km/h" comes from the tachnograph. This signal becomes "high" when the speed is larger than 10 km/h. When the drive signal becomes "high" the controlling system ensures that the body and lifting device cannot be started."

Claim 55	
Text of Claim	Evidence of Reduction to Practice
enabling the plurality of output devices when a brake of the refuse vehicle is engaged;	Exhibit J states "[bly this function the automatic gearbox is put into the Neutral position when the brake pedal is applied by the driver. As soon as the driving speed of the vehicle is lower than 5 km/h the gearbox is shifted into Neutral. When the Neutral position is reached the body is allowed to go into operation."
disabling the plurality of output devices when the brake pedal is disengaged;	Exhibits D and J. Exhibit D states "Signal "Speed > 10km/h" comes from the tachnograph. This signal becomes "high" when the speed is larger than 10 km/h. When the drive signal becomes "high" the controlling system ensures that the body and lifting device cannot be started. "Exhibit J states "[by this function the automatic gearbox is put into the Neutral position when the brake pedal is applied by the driver. As soon as the driving speed of the vehicle is lower than 5 km/h the gearbox is shifted into Neutral. When the Neutral position is reached the body is allowed to go into operation."
wherein all three steps are performed by a control system that comprises a plurality of microprocessor based interface modules, the plurality of interface modules being interconnected by way of a communication network.	Exhibit À states "[the control system will incorporate proprietary extended CAN (J1939/1 & /2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."

Claim 56	
Text of Claim	Evidence of Reduction to Practice
The method of claim 55 wherein the plurality of output devices are enabled by moving the transmission out of gear when the brake is engaged.	Exhibit J states "[b]y this function the automatic gearbox is put into the Neutral position when the brake pedal is applied by the driver. As soon as the driving speed of the vehicle is lower than 5 km/h the gearbox is shifted into Neutral. When the Neutral position is reached the body is allowed to go into operation."

Claim 57	
Text of Claim	Evidence of Reduction to Practice
The method of claim 56 wherein the plurality of output devices are disabled by moving the transmission back into gear when the brake is disengaged.	Exhibits D and J. Exhibit D states "Signal "Speed > 10km/h" comes from the tachnograph. This signal becomes "high" when the speed is larger than 10 km/h. When the drive signal becomes "high" the controlling system ensures that the body and lifting device cannot be started." Exhibit J states "[b]y this function the automatic gearbox is put into the Neutral position when the brake pedal is applied by

Claim 57	
Text of Claim	Evidence of Reduction to Practice
	the driver. As soon as the driving speed of the vehicle is lower than 5 km/h the gearbox is shifted into Neutral. When the Neutral position is reached the body is allowed to go into operation."

Claim 58	
Text of Claim	Evidence of Reduction to Practice
The method of claim 55 wherein the plurality of output devices receive power from a power takeoff.	Exhibit B-2 states "[w]hen the signal is "high" the controlling system (PLC) knows that the engine of the truck is running, this engine delivers by use of the PTO (Power Take Off) the necessary hydraulic aperty."

Claim 59	
Text of Claim	Evidence of Reduction to Practice
A refuse vehicle comprising:	Exhibit A states "[t]he GPM IIe is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers."
a transmission; and	Exhibits B-1 and C. Exhibit B states "[t]his signal initiates that the engine of the truck is running." Exhibit C states "when the gearbox of the vehicle is not in its neutral position"
a control system which comprises:	Exhibit A states "[t]he control system will incorporate proprietary extended"
a plurality of microprocessor based interface modules;	Exhibit A states "[tihe control system will incorporate proprietary extended CAN (J1939/1 & //2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."
a communication network configured to interconnect the plurality of interface modules; and	Exhibit A states "[t]he control system will incorporate proprietary extended CAN (J1939/1 & //2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."
at least one output device;	Exhibit A. Exhibit A states "[a] VIM (Vehicle Interface Module), various Input and Output modules"
wherein the control system is configured to disable the output device when the transmission is in gear; and	Exhibit D states "Signal "Speed > 10km/n" comes from the tachnograph. This signal becomes "high" when the speed is larger than 10 km/h. When the drive signal becomes "high" the controlling system ensures that the body and lifting device cannot be

Cla	im 59
Text of Claim	Evidence of Reduction to Practice
	started."
wherein the control system is configured to enable the output device by moving the transmission out of gear when a brake is engaged and the refuse vehicle is not moving faster than a threshold speed of approximately 2 kilometers per hour to approximately 20 kilometers per hour.	Exhibits D and J. Exhibit D states "Signal "Speed J Okrm/h" comes from the tachnograph. This signal becomes "high" when the speed is larger than 10 km/h. When the drive signal becomes "high" the controlling system ensures that the body and lifting device cannot be started. Exhibit J states "[by the function the automatic gearbox is put into the Neutral position when the brake pedal is applied by the driver. As soon as the driving speed of the vehicle is lower than 5 km/h the gearbox is shifted into Neutral. When the Neutral position is reached the body is allowed to go into operation."

Claim 60	
Text of Claim	Evidence of Reduction to Practice
The refuse vehicle of claim 59 wherein the threshold speed is between approximately 4 kilometers per hour and approximately 8 kilometers per hour.	This is within the scope of Exhibit J. Exhibit J states "fly his function the automatic gearbox is put into the Neutral position when the brake pedal is applied by the driver. As soon as the driving speed of the vehicle is lower than 5 km/h the gearbox is shifted into Neutral. When the Neutral position is reached the body is allowed to go into operation."

Claim 61	
Text of Claim	Evidence of Reduction to Practice
A refuse vehicle comprising:	Exhibit A states "[t]he GPM IIe is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers."
a transmission; and	Exhibits B-1 and C. Exhibit B states "[t]his signal initiates that the engine of the truck is running." Exhibit C states "when the gearbox of the vehicle is not in its neutral position"
a control system which comprises:	Exhibit A states "[t]he control system will incorporate proprietary extended"
a plurality of microprocessor based interface modules;	Exhibit A states "[the control system will incorporate proprietary extended CAN (J1939/1 & //2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."
a communication network configured to interconnect the plurality of interface modules; and	Exhibit A states "tithe control system will incorporate proprietary extended CAN (J1939/1 & /2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and

Claim 61	
Text of Claim	Evidence of Reduction to Practice
	Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."
at least one output device;	Exhibit A. Exhibit A states "[a] VIM (Vehicle Interface Module), various Input and Output modules"
wherein the control system is configured to disable the output device when the transmission is in gear; and	Exhibit D states "Signal "Speed > 10km/h" comes from the tachnograph. This signal becomes "high" when the speed is larger than 10 km/h. When the drive signal becomes "high" the controlling system ensures that the body and lifting device cannot be started."
wherein the control system is configured to disable the output device from being actuated when the transmission is in gear, the control system being configured to enable, when the transmission is in gear, the output device to complete an operation initiated when the transmission was not in gear.	Exhibit G states "[a]s soon as the vehicle starts driving, an already started compaction cycle will be completed. If the function start "continuous" is activated, it will stop after the compaction mechanism has finished its cycle."

Claim 62	
Text of Claim	Evidence of Reduction to Practice
The refuse vehicle of claim 61 wherein the operation comprises compacting refuse in the refuse vehicle.	Exhibits A, F-1 and F-2. Exhibit A states "[t]he GPM Itle is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers." F-1 and F-2 show a refuse loader, a refuse compactor and a taligate.

Claim 63		
Text of Claim	Evidence of Reduction to Practice	
The refuse vehicle of claim 61 wherein the operation comprises loading refuse in the refuse vehicle.	Exhibits A, F-1 and F-2. Exhibit A states "tjhe GPM IIe is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers." F-1 and F-2 show a refuse loader, a refuse compactor and a taligate.	

Claim 64		
Text of Claim	Evidence of Reduction to Practice	
A refuse vehicle comprising:	Exhibit A states "[t]he GPM IIe is suitable for the collection of bulky and/or domestic refuse and it can	
	also handle various types of containers."	
a control system which comprises:	Exhibit A states "[t]he control system will incorporate proprietary extended"	
a plurality of microprocessor based interface modules;	Exhibit A states "[t]he control system will incorporate proprietary extended CAN (J1939/1 & /2) data bus network communications to monitor	

	and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous
	body and cab mounted switches will be used for system operation."
a communication network configured to	Exhibit A states "[t]he control system will
interconnect the plurality of interface modules;	incorporate proprietary extended CAN (J1939/1 &
and	/2) data bus network communications to monitor
und	and control various system functions. A VIM
	(Vehicle Interface Module), various Input and
	Output modules, operator display, and numerous
	body and cab mounted switches will be used for
	system operation."
at least one output device:	Exhibit A. Exhibit A states "[a] VIM (Vehicle
'	Interface Module), various Input and Output
	modules"
wherein the control system is configured to	This is within the scope of Exhibit J. Exhibit J states
disable the output device when the refuse	"[b]y this function the automatic gearbox is put into
vehicle reaches a threshold speed of	the Neutral position when the brake pedal is applied
approximately 2 kilometers per hour to	by the driver. As soon as the driving speed of the
	vehicle is lower than 5 km/h the gearbox is shifted
approximately 20 kilometers per hour.	into Neutral. When the Neutral position is reached
	the body is allowed to go into operation."

Claim 65			
Text of Claim	Evidence of Reduction to Practice		
The refuse vehicle of claim 64 wherein the threshold speed is approximately 4 kilometers per hour to approximately 10 kilometers per hour.	This is within the scope of Exhibit J. Exhibit J states Tbly this function the automatic gearbox is put into the Neutral position when the brake pedal is applied by the driver. As soon as the driving speed of the vehicle is lower than 5 km/h the gearbox is shifted into Neutral. When the Neutral position is reached the body is allowed to go into operation."		

Claim 66		
Text of Claim	Evidence of Reduction to Practice	
A refuse vehicle comprising:	Exhibit A states "[t]he GPM IIe is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers."	
a control system which comprises:	Exhibit A states "[t]he control system will incorporate proprietary extended"	
a plurality of microprocessor based interface modules;	Exhibit A states 't[t]he control system will incorporate proprietary extended CAN (J1939/1 & /2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."	
a communication network configured to	Exhibit A states "[t]he control system will	

interconnect the plurality of interface modules; and	incorporate proprietary extended CAN (J1939/1 & //2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation.*
at least one output device which pertains to a refuse loader;	Exhibits A, F-1 and F-2. Exhibit A states "[t]he GPM lie is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers." Exhibit A further states "[a] VIM (Vehicle Interface Module), various input and Output modules" F-1 and F-2 show a refuse loader, a refuse compactor and a tailgate.
wherein the control system is configured to disable the output device when the refuse vehicle reaches a threshold speed.	Exhibit J states "[b]y this function the automatic gearbox is put into the Neutral position when the brake pedal is applied by the driver. As soon as the driving speed of the vehicle is lower than 5 km/b the gearbox is shifted into Neutral. When the Neutral position is reached the body is allowed to go into operation."

Clai	m 67
Text of Claim	Evidence of Reduction to Practice
A refuse vehicle comprising:	Exhibit A states "[t]he GPM IIe is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers."
a control system which comprises:	Exhibit A states "[t]he control system will incorporate proprietary extended"
a plurality of microprocessor based interface modules;	Exhibit A states "[the control system will incorporate proprietary extended CAN (J1939/1 & //2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."
a communication network configured to interconnect the plurality of interface modules; and	Exhibit A states "[tjhe control system will incorporate proprietary extended CAN (J1939/1 & //2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."
at least one output device which pertains to a refuse compactor;	Exhibits A, F-1 and F-2. Exhibit A states "[t]he GPM lie is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers." Exhibit A further states "[a] VIM (Vehicle Interface Moduley, various input and Output modules" F-1 and F-2 show a refuse loader, a refuse compactor and a taligate.

Claim 67		
Text of Claim	Evidence of Reduction to Practice	
wherein the control system is configured to disable the output device when the refuse vehicle reaches a threshold speed.	Exhibit J states "[b]y this function the automatic gearbox is put into the Neutral position when the brake pedal is applied by the driver. As soon as the driving speed of the vehicle is lower than 5 km/h the gearbox is shifted into Neutral. When the Neutral position is reached the body is allowed to go into operation."	

Claim 68			
Text of Claim	Evidence of Reduction to Practice		
A refuse vehicle comprising:	Exhibit A states "[t]he GPM IIe is suitable for the collection of bulky and/or domestic refuse and it c also handle various types of containers."		
a chassis;	Exhibit B-1 states "[t]he chassis interface consist of a number of signals."		
a body; and	Exhibit B-1 states "[t]hese are universal for each type of body which Geesink produces."		
a control system which comprises:	Exhibit A states "[t]he control system will incorporate proprietary extended"		
a plurality of microprocessor based interface modules;	Exhibit A states "tithe control system will incorporate proprietary extended CAN (J1939/1 & //2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Moduley, various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."		
a communication network configured to interconnect the plurality of interface modules; and	Exhibit A states "[t]he control system will incorporate proprietary extended CAN (J1939/1 & /2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation."		
at least one output device which pertains to the body of the refuse vehicle;	Exhibits A, F-1 and F-2. Exhibit A states "[the GPM le Is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers." Exhibit A further states "[a] VIM (Vehicle Interface Module), various input and Output modules" F-1 and F-2 show a refuse loader, a refuse compactor and a tailgate.		
wherein the control system is configured to disable the output device when the refuse vehicle reaches a threshold speed.	Exhibit J states "[b]y this function the automatic gearbox is put into the Neutral position when the brake pedal is applied by the driver. As soon as the driving speed of the vehicle is lower than 5 km/h the gearbox is shifted into Neutral. When the Neutral position is reached the body is allowed to go into operation."		

Atty. Dkt. No. 061300-0364

We hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing therefrom.

Date 3.30-07

Duane Pillar

Date 3/29/07

1400-140-1---

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1. GENERAL DESCRIPTION:

- 1.1.1. The intent of this design specification is to identify and provide the requirements for the control of the Geesink model GPM IIe rear loading refuse collection vehicle. The GPM IIe is suitable for the collection of bulky and/or domestic refuse and it can also handle various types of containers.
- 1.1.2. The control system will incorporate proprietary extended CAN (J1939/1 & /2) data bus network communications to monitor and control various system functions. A VIM (Vehicle Interface Module), Various Input and Output modules, operator display, and numerous body and cab mounted switches will be used for system operation. This equipment shall be exposed to various environmental extremes (i.e. High Moisture Exposure, Low/High Temperature, Shock, Vibration, etc.). It is further intended that the VIM, and display will be designed as a Line Replaceable Unit (LRU) for easy field replacement/servicing

1.2. CZII Component Hardware List:

- 1.2.1. (1) Vehicle Interface Module part # 3321336
- 1.2.2. (2) 24V Input Modules # 3422795
- 1.2.3. (1) 24V Current Module# 3463572
- 1.2.4. (1) Cantrak 2400 display part # 3445002
- 1.2.5. Reference: Electrical Schematic # xxxxxxx

Oshkosh Truck Corporation Corporate Electronics Group 2307 Oregon Street Oshkosh, WI 54904	Part Number: Description:	3463588 Spec, CZ2, G.	PM IIe
(920) 237-0506	CAGE NO.	Para NID	Engineering

Rev. NR

4 of 26

GEESINK NORRA KIGGEN

Geesink R V Betonweg 8 Poetbue 52

Task: #300 AR Emmeloord

COMPANY

Controlling the controls

Name: Version: 0.2

Gert Meilink

Hederland Telefoon 0527 638200 Item:

AN OSHKOSH

Functional description GCB-split

Date:

Page (s): 5 van 38

2. General system

2.1. Chassis interface

2.1.1. Scope

The chassis interface consists of a number of signals.

The chassis provides signals to the PLC. But there are also signals from the PLC to the chassis.

in the used components signals are mentioned, which are used by the PLC. These are universal for each type of body which Geesink produces.

By use of a 21-pin connector the signals of the Geesink body is connected to the signals of the chassis.

The chassis builder or supplier/dealer collects needed the signals from the chassis.

Some chassis builders make use of module to convert their CAN system into conventional wiring and put a program in this module to generate the necessary signals.

Also a lot of suppliers use relays to generate the necessary signals.

2.1.2. Used components / signals

2.1.2.1. D+ signal (from chassis)

2.1.2.1.1. Body:

This signal initiates that the engine of the truck is running.

Mhen this signal is "high" the controlling system (PLC) knows that the engine of the truck is running, this engine delivers by use of the PTO (Power Take Off) the necessary hydraulic energy.

2.1.2.1.2 Chassis:

This signal comes from the check light of the battery.

2.1.2.2. Speed > 5km/h (from chassis)

2.1.2.2.1. Body:

This signal is used for the GCP (two-compartment) body and takes care that the bin lifting frames are raised when driving faster than 5 km/h.

When the vehicle drives faster than 5 km/h this signal becomes "high".

Not used for the GCR-solit

21222 Chassis

Signal "Speed > 5 km/h" comes from the tachograph. This signal becomes "high" when the speed is larger than 5 km/h.

N OSHKOSH COMPANY GESINK NORBA KIGGEN

Functional description GCB-split

Geesink B.V. Betonweg &

Postbus 52
Task: Controlling the controls
8300 AB Emmeloord

Name: Gert Meilink

Version: 0.2

Date: Page (s): 5 van 38

2. General system

2.1. Chassis Interface

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Telefoon 0527 638200 | Item:

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This signal comes from the check light of the battery.

2.1.2.2. Speed > 5km/h (from chassis)

2.1.2.2.1. Body:

This signal is used for the GCP (two-compartment) body and takes care that the bin lifting frames are raised when driving faster than 5 km/h.

When the vehicle drives faster than 5 km/h this signal becomes "high".

Not used for the GCB-split.

2.1.2.2.2. Chassis:

Signal "Speed > 5 km/h" comes from the tachograph. This signal becomes "high" when the speed is larger than 5 km/h.

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Geesink B.V. Betonweg 8

Petalbus 2 Task: Controlling the controls Name: Gert Meilink
1308 AB Emmalord
Version: 0.2

Taliform 0527 538200 Item: Functional description GCB-split Date:
Page (s): 9 van 38

When this signal is "high" the vehicle has to restrictions to make:

Prevent driving faster than 30 km/h

Shut down the engine when the vehicle is put into Reverse.

2.1.3. Operating principle body in combination with vehicle provisions

2.1.3.1. Normal operating principle

2.1.3.1.1. Scope

When the gearbox of the vehicle is not in its Neutral position all the functions on the body are blocked for operation. This is to prevent that the vehicle wants to drive away when a raised revs control is requested from the body.

2.1.3.1.2 Realisation in the chassis:

This function is realised by the vehicle by giving a "low" signal on the PTO / Neutral signal.

The Drive signal is not used for these signals.

2.1.3.2. Operating principle of "Auto-neutral" function in case of a manual operated gearbox

2.1.3.2.1. Scope

The function "Auto-neutral" in combination with a manual operated gearbox can be used during the collection of refuse.

The driver of the vehicle needs only to apply the brake pedal and/or the clutch pedal without putting the gearbox into Neutral position, to allow the body any operation. During the collection of refuse the driver needs to keep the brake pedal and/or the clutch pedal activated.

meleasing the brake pedal and/or the clutch pedal results in stopping any operation of the body.

It is possible to add the function "Compacting during driving" to this option. For more information look in this paragraph.

2.1.3.2.2. Realisation in the chassis:

The Neutral signal of the combined signal PTO / Neutral is bridged.

The Drive signal is used by this function.

For more information look in this paragraph.

2.1.3.3. Operating principle of "Auto-neutral" function in case of a automatic gearbox

2.1.3.3.1. Scope

By this function the automatic gearbox is put into the Neutral position when the brake pedal is applied by the driver. As soon as the driving speed of the vehicle is lower then 5 km/h the gearbox is shifted into Neutral. When the Neutral position is reached the body is allowed to a ointo operation. OSHKOSH COMPANY GEESINK NORBA KIGGEN

Geesink B.V. Betonweg & Postbue 52

Task:

Controlling the controls

Name:

Gert Meilink

\$300 AB Emmeloord Nederland

Version: 0.2

Telefoon 0527 638200 Item:

Functional description GCB-split

Date: Page (s): 6 van 38

2.1.2.3. Speed > 10 km/h (from chassis)

2.1.2.3.1. Body:

This signal is used for the GCP (two-compartment) body and takes care that the scatter guard is closed when driving faster than 10 km/h, so damaging of the scatter guard is prevented. When the vehicle drives faster than 10 km/h this signal becomes "high".

Not used for the GCB-split.

2.1.2.3.2. Chassis:

Signal "Speed > 10 km/h" comes from the tachograph.

This signal becomes "high" when the speed is larger than 10 km/h.

2.1.2.4. Parking brake signal (from chassis)

2.1.2.4.1. Body:

This signal is used for a body together with a crane loading device. This signal releases the revolution control. By use of this signal it is prevented that vehicle drives away, when the vehicle is not put on the parking brake.

2.1.2.4.2. Chassis:

This signal is provided by the parking brake.

The signal becomes "high" when the vehicle is put on the parking brake.

2.1.2.5. Drive signal (from chassis)

2.1.2.5.1. Body:

When the drive signal becomes "high" the controlling system ensures that the body and lifting device can not be started

In case of a automatic gearbox, this signal prevents that the vehicle want to drive away when the "D" (drive) of the automatic gearbox is selected.

In case of a manual operated gearbox, this signal prevents that the driver wants/needs to drive away at a to high revolution number

The chassis uses the signal for switching the revolution control from 1050 rpm to 800 rpm. For more information see the function compaction during driving.

2.1.2.5.2. Chassis in case of a automatic gearbox:

In this configuration the signal "D" (drive) is an combined signal of the signal "parking brake" and the "neutral" signal of the automatic gear box.

Signal "D" drive is "high" if:

- The automatic gear box is in Drive.
- . The automatic gear box is in Neutral and the Parking brake is not activated.

Signal "D" drive is "low" if:

The automatic gear box is in Neutral and the Parking brake is activated.

AN OSHKOSH COMPANY GESINK NORBA KIGGEN

Geesink B.V. Betonweg 8 Postbus 52

Postbur 2 Task: Controlling the controls Name: Gert Meilink
Nade REmembord
Wederland
Telefono 9327 (134200 tene)
Telefono 9327 (134200 tene)

lefcon 0527 \$38200 Item: Functional description GCB-split Date:
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The automatic gear box is in Neutral and the braking pedal is activated.

2.1.2.5.3. Chassis in case of a manual operated gearbox:

In this configuration the signal "D" (drive) is an combined signal of the signals "parking brake" and the "clutch" signal of the gear box.

Signal "D" drive is "high" if:

- The gear box is not in Neutral position and the clutch pedal or braking pedal is not operated.
- The gear box is in Neutral and the Parking brake is not activated.
- Signal "D" drive is "low" if:
- The clutch pedal is operated.
 - The brake pedal is operated.
- . The gear box is in Neutral and the Parking brake is activated.

2.1.2.6. Activating Auto-Neutral (from body)

2.1.2.6.1. Body:

With the signal "Auto-Neutral" from the body the vehicle options, which are integrated by a chassis manufacturer, can be activated and de-activated.

This signal becomes "high" as soon as the body is switched on. This is activated by operating the switch "\$1" in the cabin. If there are problems with the chassis, the influence of the body to the chassis can be stopped by switching of the switch "\$1".

2.1.2.6.2. Chassis:

When this signal becomes "high" the Auto-Neutral function is activated, so that the chassis can communicate with the body.

When this signal becomes "low" the Auto-Neutral function is de-activated, so that the chassis does not react on any signal of the body.

2.1.2.7. Reverse signal (from chassis)

2.1.2.7.1. Body:

When this signal is "high" the monitor in the cabin is switched on.

When this signal is "high", also the lifting is stopped.

2.1.2.7.2. Chassis:

The reverse signal is taken from the (automatic) gearbox, when the reverse is selected.

2.1.2.8. PTO / Neutral (from chassis)

2.1.2.8.1. Body:

When this signal is "high" the functions on the body can be activated.

2.1.2.8.2. Chassis:

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N О S Н К Geesink B.V.	озн с	O M P A N Y	EESINK NORB	R KIGGEN
Betonweg 8 Postbus 52 8300 AB Emmeloord Nederland	Task:	Controlling the controls	Name: Version:	Gert Meilink 0.2
Telefoon 0527 638200	Item:	Functional description GCB-split	Date: Page (s):	2 van 38
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GEE	SINK	NORBA	GROUP	EXHIBIT F-2	

Geesink B.V.		E14-6	TIVIN MUNB	n RIGGEN
Betonweg 8				
Postbus 52	Task:	Controlling the controls	Name:	Gert Meilink
8300 AB Emmeloord Nederland		•	Version:	0.2
Telefoon 0527 638200	item:	Functional description GCB-split	Date:	0.2
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		. , ,		

N OSHKOSH COMPANY GESINK NORBA KIGGEN

Geesink B.V.

Betoneug 8 Posture 12 Task: Controlling the controls Name: Gert Meilink 1994 Name: Gert Meilink Naderland Version: 0.2

Nederland Version: 0.2
Telefoon 0527 638200 | Item: Functional description GCB-split Date:

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To realise this option, the chassis needs to be ordered with a modification so that when the signal "Auto-neutral" is "high" the automatic gearbox is shifted into Neutral after the brake pedal is operated and the driving speed is lower than 5 km/h.

Additional to the "Auto-neutral" option it is needed that after releasing the brake pedal the automatic gearbox is shifted into Drive.

2.1.3.5. Operating principle of "Compacting during driving"

2.1.3.5.1. Scope

This option is only possible in combination with the functions "Auto-neutral" and "Stop & Go".

as soon as the vehicle starts driving, an already started compaction cycle will be completed. If the function start "continuous" is activated, it will stop after the compaction mechanism has finished its cycle.

Normal operation:

Step	Condition	Action
1	The vehicle is put into a gear (no more Neutral).	Active compaction cycle is finished.
2	Finished cycle.	Further operation of the body is not allowed.

2.1.3.5.2. Realisation in the chassis:

The signal "D" (drive) will be added to the logic's in the signal "revolution control" in the chassis. The "D" (drive) signal arranges the switching in the programming of the revolution control.

For more information about the revolution control look in that paragraph.

2.1.3.6. Operating principle of "Loading while driving"

2.1.3.6.1. Scope

With this option it is possible to load faster with the lifting device, because the lifting can also be operated during driving.

As long as the vehicle stands still, it is possible to start a lifting cycle. This cycle will continue as soon as the vehicle starts driving away.

Normal operation:

	Step	Condition	Action
	1	The vehicle is put into a gear (no more Neutral).	Active lifting cycle is finished.
i	2	The vehicle is put into Reverse.	The lifting cycle is stopped.

2.1.3.6.2. Realisation in the chassis:

Signal "Reverse" is used for this option.

2.2. Condition for activating the body

2.2.1. Used components

<<<Tabel met punten, wanneer belading, opbouw en persmechanisme wordt vrijgegeven.>>>>>

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AN OSHKOSH COMPANY GESSING NORBA KIGGEN

Geesink B.V. Betonweg & Postbus 52

Task:

Controlling the controls

Name:

8300 AB Emmeloord Nederland Telefoon 0527 638200

lask:

Functional description GCB-split

Version: 0.2

Gert Meilink

Date:

Page (s): 14 van 38

2.5. Emergency circuit

2.5.1. Used components

Туре	Code	Description	Position	
Push button	S4	Emergency stop	cp-ET1	Standard
Push button	S5	Emergency stop	cp-ET2	Standard
Push button	S6	Emergency stop	cp-GCB1	GCB:
Push button	S7	Emergency stop	cp-GCB2	GCB:
Push button	S57	Emergency stop	cp-EGCB1	GCB:
Push button	S58	Emergency stop	cp-EGCB2	GCB:
Buzzer	B1	Buzzer	cp-MCB	Standard
Relay	K2	Emergency stop 1	СВ	Standard
Relay	K3	Emergency stop 2	СВ	Standard

2.5.2. Operating principle

After the emergency stop switches the circuit is made redundant.

By use of K2 and K3 the power supply is put on the hydraulic valves.

The emergency stop switches control directly K2 and K3 is controlled by the PLC.

The pneumatic valves are not controlled by K2 and K3 because this could result in unintentional movement of pneumatic operated parts.

The emergency stop circuit does not block the function of the "Release" button.

After activating an emergency switch an acoustic signal is given by the "Buzzer" in the cabin.

2.6. Access door in body (Option: GPM: 09-D)

2.6.1. Used components

Туре	Code	Description	Position	
Limit switch	Q58	Door is closed in body		GPM: 09-D

2.6.2. Operating principle

When the access door is opened the functions of the body are switched off by Q58.

2.7. Camera

2.7.1. Used components

Туре	Code	Description	Position	

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Geesink B.V. Betonweg 8 Poethus 52

Task: Controlling the controls Name: Gert Meilink

\$100 AB Emmeloord Version: 0.2
Nederland Frieldson 9527 534200 Item; Functional description GCB-split Date:

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2.1.2.3. Speed > 10 km/h (from chassis)

2.1.2.3.1. Body:

This signal is used for the GCP (two-compartment) body and takes care that the scatter guard is closed when driving faster than 10 km/h, so damaging of the scatter guard is prevented.

When the vehicle drives faster than 10 km/h this signal becomes "high".

Not used for the GCB-split.

2.1.2.3.2 Chassis:

Signal "Speed > 10 km/h" comes from the tachograph.

This signal becomes "high" when the speed is larger than 10 km/h.

2.1.2.4. Parking brake signal (from chassis)

2.1.2.4.1. Body:

This signal is used for a body together with a crane loading device. This signal releases the revolution control. By use of this signal it is prevented that vehicle drives away, when the vehicle is not put on the parking brake.

2 1 2 4 2 Chassis

This signal is provided by the parking brake.

The signal becomes "high" when the vehicle is put on the parking brake.

2.1.2.5. Drive signal (from chassis)

2.1.2.5.1. Body:

When the drive signal becomes "high" the controlling system ensures that the body and lifting device can not be started.

In case of a automatic gearbox, this signal prevents that the vehicle want to drive away when the "D" (drive) of the automatic gearbox is selected.

In case of a manual operated gearbox, this signal prevents that the driver wants/needs to drive away at a to high revolution number.

The chassis uses the signal for switching the revolution control from 1050 rpm to 800 rpm. For more information see the function compaction during driving.

2.1.2.5.2. Chassis in case of a automatic gearbox:

In this configuration the signal "D" (drive) is an combined signal of the signal "parking brake" and the "neutral" signal of the automatic gear box.

Signal "D" drive is "high" if:

The automatic gear box is in Drive.

The automatic gear box is in Neutral and the Parking brake is not activated.

Signal "D" drive is "low" if:

The automatic gear box is in Neutral and the Parking brake is activated.

N OSHKOSH COMPANY GESINK NORBA KIGGEN

Geesink B.V. Betonweg \$

Postbus 52 Task: Controlling the controls Name: Gert Meilink

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When this signal is "high" the vehicle has to restrictions to make:

- Prevent driving faster than 30 km/h
- Shut down the engine when the vehicle is out into Reverse.

2.1.3. Operating principle body in combination with vehicle provisions

2.1.3.1. Normal operating principle

2.1.3.1.1. Scope

When the gearbox of the vehicle is not in its Neutral position all the functions on the body are blocked for operation. This is to prevent that the vehicle wants to drive away when a raised revs control is requested from the body.

2.1.3.1.2. Realisation in the chassis:

This function is realised by the vehicle by giving a "low" signal on the PTO / Neutral signal.

The Drive signal is not used for these signals.

2.1.3.2. Operating principle of "Auto-neutral" function in case of a manual operated gearbox

2.1.3.2.1. Scope

The function "Auto-neutral" in combination with a manual operated gearbox can be used during the collection of refuse.

The driver of the vehicle needs only to apply the brake pedal and/or the clutch pedal without putting the gearbox into Neutral position, to allow the body any operation. During the collection of refuse the driver needs to keep the brake pedal and/or the clutch pedal activated.

Releasing the brake pedal and/or the clutch pedal results in stopping any operation of the body.

It is possible to add the function "Compacting during driving" to this option. For more information look in this paragraph.

2.1.3.2.2, Realisation in the chassis:

The Neutral signal of the combined signal PTO / Neutral is bridged.

The Drive signal is used by this function.

For more information look in this paragraph.

2.1.3.3. Operating principle of "Auto-neutral" function in case of a automatic gearbox

2.1.3.3.1. Scope

By this function the automatic gearbox is put into the Neutral position when the brake pedal is applied by the driver. As soon as the driving speed of the vehicle is lower then 5 km/h the gearbox is shifted into Neutral. When the Neutral position is reached the body is allowed to on into operation.

AN OSHKOSH COMPANY GESSING NORBA KIGGEN

Gsesink B.V. Betonweg 8 Postbus 52 8300 AB Emm

Postbus 52 Task: Controlling the controls

Name: Gert Meilink

Version: 0.2

Telefoon 0527 638200 Item: Functional description GCB-split

Page (s): 11 van 38

To realise this option, the chassis needs to be ordered with a modification so that when the signal "Auto-neutral" is "high" the automatic gearbox is shifted into Neutral after the brake pedal is operated and the driving speed is lower than 5 km/h.

Additional to the "Auto-neutral" option it is needed that after releasing the brake pedal the automatic gearbox is shifted into Drive.

2.1.3.5. Operating principle of "Compacting during driving"

2.1.3.5.1. Scope

This option is only possible in combination with the functions "Auto-neutral" and "Stop & Go".

As soon as the vehicle starts driving, an already started compaction cycle will be completed. If the function start "continuous" is activated, it will stop after the compaction mechanism has finished its cycle.

Normal operation:

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For more information about the revolution control look in that paragraph.

2.1.3.6. Operating principle of "Loading while driving"

2.1.3.6.1. Scope

With this option it is possible to load faster with the lifting device, because the lifting can also be operated during driving.

As long as the vehicle stands still, it is possible to start a lifting cycle. This cycle will continue as soon as the vehicle starts driving away.

Normal operation:

Ŀ	Step	Condition	Action
1	1	The vehicle is put into a gear (no more Neutral).	Active lifting cycle is finished.
2	2	The vehicle is put into Reverse.	The lifting cycle is stopped.

2.1.3.6.2. Realisation in the chassis:

Signal "Reverse" is used for this option.

2.2. Condition for activating the body

2.2.1. Used components

<<< Tabel met punten, wanneer belading, opbouw en persmechanisme wordt vrijgegeven.>>>>

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EXHIBIT L

Meier, Karen M.

Subject:

APPROVED: NM013110 OSHKOSH TRUCK CORPORATION / US PAT APP/INCORPORATION OF COMMAND ZONE INTO REFUSE VEHICLE WITH EUROPEAN-STYLE SAFETY DEVICES

From: metastorm@foleylaw.com
Sent: Tuesday, March 04, 2003 11:54 AM
To: kmelæ@foleylaw.com
Cc: dhuetgen@foleylaw.com
Subject: APPROVED: NM013110 OSHKOSH TRUCK CORPORATION / US PAT
APPINICORPORATION OF COMMAND ZONE INTO REFUSE VEHICLE WITH
EUROPEAN-STYLE SAFETY DEVICES

The referenced New Matter request has been approved. Please check your watch list. The client matter number is: Client Name: OSHKOSH TRUCK CORPORATION # 081300 Matter Name: US PAT APP/INCORPORATION OF COMMAND ZONE INTO REFUSE VEHICLE WITH EUROPEAN-STYLE SAFETY DEVICES # 0364

JGM	DGL	SCN

3/25/03 Vathy: Please dieket as n disclusure. TARGET FILING DATE: 5/31/03 Value

1

EXHIBIT M

Atty. Dkt. No. 061300-0364

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Pillar et al.	CERTIFICATE OF EXPRESS MAILING
Title:	REFUSE VEHICLE CONTROL SYSTEM AND METHOD	I hereby certify that this correspondence is being deposited with the United States Pottal Service: "Express Mail Pest Office To Addressee" service under 37 C.F.R. 91.10 on the date indicated below and is addressed to: Commissioner for Patents, P.O. Box 1459, Alexandris, V. 2333-1450.
Appl. No.:	10/668,002	(Express Mail Label Number) (Date of Deposit)
Filing Date:	09/22/2003	(Printed Name)
Examiner:	Broadhead, Brian J.	(Printed Name) (Signature)

DECLARATION UNDER 37 C.F.R. § 1.131

Commissioner for Patents

PO Box 1450

Art Unit:

Alexandria, Virginia 22313-1450

3661

Sir:

I, Scott C. Nielson, state and declare that:

- I am currently employed as a patent attorney at Holland & Hart LLP in Salt Lake City, Utah.
- While employed as a patent attorney at Foley & Lardner LLP, I drafted the abovereferenced patent application.
- Attached as Exhibit L is a Foley and Lardner patent application approval form dated March 4, 2003.
- To the best of my recollection, the Folcy and Lardner patent application approval form dated March 4, 2003 of Exhibit L was issued on the date that I was asked to prepare the above-referenced patent application.
- The above-referenced patent application was one of four related patent applications I was
 assigned from this client during this timeframe. The client matter numbers for these
 applications were 61300-361, 61300-362, 61300-363 and 61300-364. The 61300-364
 client matter number corresponds to patent application number 10/668,002.

- At the time that I was assigned the patent application of Exhibit L, I had a backlog of
 patent applications, prosecution, and other work which I was working on.
- 7. I worked on the backlog in the time period of March 4, 2003 through June 18, 2003.
- On June 19, 2003, I began work drafting the above-referenced patent application and worked on it regularly until I filed the patent application on September 22, 2003.
- 9. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are true, and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the patent application or any patent issuing therefrom.

Date:	By: Sott Coly
	Scott C. Nielson

EXHIBIT N

Billed and Unbilled Time Detail for OSHKOSH TRUCK CORPORATION 061300-0364 US PAT APPINCORPORATION COMMAND ZONE INTO 061300-0364 US PAT APPINCORPORATION US 010012003 through 1221/2003

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022112003 02212003 02212003 02212003 02212003 02222003	gen, David G.	02/10/2003	04/04/2003			Continue drafting memorandum regarding follow-up from Command Zone patent disclosure meeting.
020112003 04404000 002011200 002011200 002011200 002011200 002011200 002011200 002011200 002011200 002011200 002011200 002011200 002011200 002011200 002011200 002011200 002011200 002011200 002012000 0010112003 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 0020000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 002012000 00201200	Luettgen, David G.	02/11/2003	04/04/2003			Review and revise follow-up memorandum regarding Command
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0204-2003 04-00-2003 0202-2003 04-00-2003 0202-2003 04-00-2003 0202-2003 04-00-2003 0202-2003 06-02-2003 0202-2003 06-02-2003 0202-2003 06-02-2003 0202-2003 06-02-2003 0771-7003 06-02-2003 0771-7003 06-02-2003 0771-7003 06-02-2003 0771-7003 06-02-2003 0771-7003 06-02-2003 0771-7003 06-02-2003 0771-7003 06-02-2003 0771-7003 06-02-2003 0771-7003 06-02-2003 0771-7003 06-02-2003 0771-7003 06-02-2003 0771-7003 06-02-2003 0771-7003 06-02-2003	Luettgen, David G.	02/21/2003	04/04/2003			Lorie Insetury, Finalize foldwayn memoriandum from Command Zone meeting, forward same to Messrs. D. Pillar, B. Squires, N. Bjornslad, and W. Woolman for comments; consider follow-up comments
000402003 044004000 0000000000 0000000000	Luetigen, David G.	03/04/2003	04/30/2003			regarding same. Telephone conference with Mr. D. Pillar regarding application and request additional documents, leave follow-up voice mail
0000402003	Nielson, Scott C.	03/04/2003	04/30/2003			with Mr. W. Woolman regalding same. Conference with Mr. D. Pillar and Mr. D. Luettgen to obtain more information in control for direction control medication.
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6612-2003	gen, David G.	05/08/2003	07/10/2003			Prepare surmany of application, update Command Zone Prepare surmany of application, update Command Zone surmany data to reflect same; (loward updated summany chart surmany chart to reflect same; (loward updated summany chart surmany chart prepared survivors to Mr. R. Paulicoch root request (sold entry)
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071112003 083002003 07112003 083002003 071212003 083002003 071212003 083002003 071222003 083002003 071222003 083002003	n, Scott C.	07/01/2003	09/30/2003			Drafting patent application; telephone conversation with W. Woolman regarding patent application; conference with D. Lustinen recarding natent analysation.
01/19/2003 09/30/2003 01/20/2003 09/30/2003 01/20/2003 09/30/2003 01/20/2003 09/30/2003 01/20/2003 09/30/2003	gen, David G.	07/11/2003	09/30/2003			Conference with S. Nelson regarding Command Zone inventorable previous to Conference with S. Nelson regarding Same review American inventorable, per-mil to D. Dillar regarding same review American Bioxience case regarding same fault charges.
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07724703 09-02003 07725700 09-02003 07725700 09-02003	on, Scott C.	07/21/2003	09/30/2003			Drafting the patent application.
07725703 083042003 077257003 083042003	m, Scott C.	07/24/2003	09/30/2003			Drafting patent application.
0725/2003 09/20/2003 0728/2003 09/30/2003	gen, David G.	07/25/2003	09/30/2003			Telephone conference with C. Dougitty regarding invention disclosure documents and other issues; follow-up e-mails to C. Dounhy moarding same fixell chains).
07/28/2003 09/30/2003	on, Scott C.	07/25/2003	09/30/2003			Drafting patent application.
	gen, David G.	07/28/2003	09/30/2003			Review and revise first draft of application.

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Nielson, Scott C.	07/28/2003	09/30/2003	Destino the	Crafting the patent application
Luetigen, David G.	07/29/2003	09/30/2003	Review and	Review and revise application; cor
Nielson, Scott C.	07/29/2003	09/30/2003	regarding application	regarding application. Conference with D. Luettoen regar
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Nielson, Scott C.	08/08/2003	11/19/2003	the patent application. Revising the patent; fo	he patent application. Revising the patent; formatting and
Nielson, Scott C.	09/02/2003	12/16/2003	inventors for review. Email corresponden	nventors for review. Email correspondence with the inv
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Nielson, Scott C.	09/19/2003	12/16/2003	patent application. Preparing the pater	selent application. Preparing the patent application an
Nielson, Scott C.	09/22/2003	12/16/2003	the inventor Reviewing t	the inventors to review and execut Reviewing the patent application by
Nielson, Scott C.	0923/2003	12/16/2003	reviewing d	reviewing documents to be filed will Reviewing and executing a letter to
			the filing of Messrs. W. disclosure in	the filing of the patent application; a Messrs. W. Woolman and D. Pillar disclosure in prosecuting a patent.
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Morrow, James G.	09/25/2003	12/16/2003	patent application. Review correspond	patent application. Review correspondence reparding
Nietson, Scott C.	10/09/2003	12/23/2003	Review form the drawing	Review formal drawings; telephone the drawings to discuss changes; by Woolman reporting metabolists dues
Nielson, Scott C.	10/10/2003	12/23/2003	Currently so Update file v	currently sold and used in Europe. Update file with revised formal draw
Luetigen, David G.	10/27/2003	12/23/2003	Review pres	Review press release regarding rol
Nielson, Scott C.	10/27/2003	12/23/2003	SmartPack; Review mat	SmartPack; e-mail to Mr. S. Nielso Review materials announcing relea
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Luettgen, David G.	11/20/2003	01/08/2004	regarding ar of an Inform Review app	regarding any documents that may of an Information Disclosure Stater Review application status for Comm
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Description	CAB	LED 4, Unloading mode	LED 5 F1, Bodyfunctions	LED 6 F2, Quiet	LED * Cleaning/Compaction	LED # R.H drive	LED Alarm	Buzzer	LED Background light		Description	CAB	OnOff	Beacon	Work light	Unloading mode	F1; bodyfunctions from cab	F2; quiet	Cleaning	R.H drive	Description	n 1,000	S. Print	See	Ol tento.		Electionalate in/out				Description	TAILGATE L.H								
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Description	CAB							Tailgate speed	Eject comp speed		Description	CAB	Startup flag	Buttons reset	Joke speed	Packer plate speed	Lock start compaction	Buttons OK body			Description	n i Adda								Tailgate open L	Description	TAILGATE L.H	Footstep High signal	Foolstep I ow signal						
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Description	CAB	Emergency stop High sig	Emergency stop Low sig	Gear box / Brake OK		Footstep ok	Footstep max 30km/h	DI/DO Revs. control	Power take off / Pump		Description	CAB	Counter Liftstart L	Counter Shakings A	Counter Shakings B	Counter 4	Counter 5	Counter 6	Backpressure A		Decodolice	0.000	Emorrange, elso High	Consideration for the fact of	Em stor Lowinsp.dog Lo	Citizator Comingo.coc	Cleanino	Taikale up	Tailgate down 1	Tailgate down 2	Description	TALGATE L.H	Emergency stop High sig	Emergency stop Low sig		Signal	Start			Tailgate closed Left
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Description	TAILGATE R.H									Description	CONTROL BOX										Description	CONTROL BOX			HLL constant oil flow					
g		A	ΑI	A	AI	A	A	A	AI	Q		8	8	80	8	8	8	8	8	9	2		PWM	PWM	PWM	MMd	MMd	PWM	PWM	PWM
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Description	TALGATE R.H	Footstep High signal	Footstep Low signal							Description	CONTROL BOX	Emergency stop High sig	Emergency stop Low sig		Buzzer reverse direction	Work light	Beacon	Work light/Reverse			Describnon	CONTROL BOX	The state of the s		Joke pos. up	Packer plate pos. out	Pressure sensor	Packer plate pos.(auto)	Joke pos.down	Packer plate pos. in
g		ā	5	_	5	00/10	OMDO	OQAC	OMO	Q.		8	8	8	8	8	8	8	8		2		ΑI	AI	AI	AI	AI	AI	A	Ā
<u>۔</u>	1015	1 (9)	2 (10) DI	3(11) DI	4 (12) DI	5 (13) DVDO	6 (14) DVDO	7 (15) DVDO	8 (16) DIVDO	9	1018	-	2	3 [4	5	9	7	8	l	-1	2	1	2 /	3 //	4	9	9	1	
Description	TALGATE R.H	Emergency stop High sig		Т	Signal	Start		Ravebar dosed	Tailgate closed Right	Description	CONTROL BOX	Radio	Radio	Radio		Radio	Radio	Radio	Radio			NIKOL BOX	THE	Emergency stop OK	Emergency stop L HLL	Reverse signal	Start HLL	Check HLL is on	Revs. control HLL	Oil request HLL
ç		ā	ā	ō	ā	ō	ō	ō	ō	Q		AVR	AVR	AVRI	AVRI	AVRI	AVR	AVRI	AVRI	91	3		ā	ō	ī	ō	IQ	iQ	ō	ā
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2 of 3
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1	CAB	105		CAB	EQ1	CAB	_	
1	Emergency stop High sig		₹ <		- 6	LED 4, Unloading mode		
	Court box / British OK	,	2 4		2 20 20 20 20 20 20 20 20 20 20 20 20 20	LED S F I, Bodylukaldıs	_	
- NE		4	4		Т	+=		
00/10	Footstep ok	2	₹		5 DO K	LED # R.H drive	_	
OQ/IQ	Footstep max 30km/h	٥	¥		6 DO K	г т	_	
DVD0	Revs. control	7	A	Tailgate speed			_	
000	Power take off / Pump	8	₹	Eject comp speed	8 00 K	LED Background light	_	
9	Description	ş	9	Description	9	Description	ON NO	Description
l	CAB	20		CAB	9Q	CAB	1D7	CAB
	Counter Liftstart L	Ļ	ΑO	Startup flag	1 Di TK	Ontoff	ı Di	DI_TK Ejection plate in
¥	Counter Shakings A	2	ΑO	Buttons reset	2 DI TK		2 DI	
ΑI	Counter Shakings B	9	ΑO	Joke speed	3 DI TK	1	3 DI	
	Counter 4	4	ΑO	Packer plate speed	4 Di TK		4 DI	DI TK Taligate down
П	Counter 5	2	VΟ	Lock start compaction	S DITK		5	
Α	Counter 6	9	ΑO	Buttons OK body	6 DITK		6 Di	
	Backpressure A	7	οĄ		7 Di TK	Cleaning	7 10	DLTK Test A
			Q		8 DI TK		8 DI	DI_TK Test B
9	Description	£	8	Description	9	Description		
١	BOOYLH	<u>6</u>		BOOYLH	ID10	ВООУ С.Н	_	
	Emergency stop High	1(6)	ō		- W	Oil level		
	Em.stop Low/Insp.door Let 2 (10) DI	53	ō		2 AI	Oil temp.		
	Em.stop Low/Insp.door Riv	3 (11) [DI	ō		3 AI			
ō		4 (12) DI	ā		4 A		_	
ā	Cleaning	5(13	5 (13) DVDO		S AI	Ejectionplate in/out		
ā	Tailgate up	6 (14	6 (14) DVDO		6 A		_	
ā	Tailgate down 1	7 (15	7 (15) DVDO		7		_	
ā	Tailgate down 2	8(16	8 (16) DI/DO	Tailgate open L	8 Al		_	
2	Description	£	ō	Description	No No	Description		
ı	TAILGATE L.H	5		TAILGATE LH	ID13	TALGATE L.H	_	
ā	Emergency stop High sig	1 (9)	₫	Footstep High signal	4		_	
ō	Emergency stop Low sig	2 (10) DI	ī	Footstep Low signal	2 AI		_	
ō		3(11) DI	٥	Binlift up	3 A		_	
ō	Signal	4 (12) Di	ō	Binlift down	A		_	
ō	Start	5 (13	5 (13) DI/DO	1	S AI			
ō		6(14	6 (14) DVDO	+	9		_	
ā		7 (15	OD/ID	DINam	7 AI		_	
	Tailgate closed Left	8 (16	8 (16) DI/DO		8 AI		_	

																						Γ	Ī	Ī	Γ	Γ	Γ	Γ	Γ											
																					Description	CONTROL BOX	Ejection plate out	Election plate in	Tailgate up	Tailgate down	Joke down	Joke up	Packer plate in	Packer plate out										
																					ç		MMd	MMd	PWM	PWM	PWM	PWW		PWM										
																					-	L	Γ	_	ž	Γ	ŧ		++											
Description	The same of the sa									Description	Not to the second	CONTROL BOX	Biniid opener Out	Binlid opener In			Bin lock Close	Bin lock Open			Description	BOX		Binlift Down	Container arms Up	Container arms Down														
2		₹:	Z	F	٩ı	F	AI	¥	٩ı	ç		1	3	8	8	8	8	8	8	8	g		MMd	MMd	MMd	MMd	MMd	MMd	MMd	MMd										
2 2	[_	2	6	4	2	9	7	8	ž		8	_		9	4	. 9	9	4	8	<u> </u>	22		÷	\$	ż	÷	ě	‡	7	_				_					_
Description		Footstep High signal	Footstep Low signal	Binlift Up	Binlift Down	Footstep in position	Container arms Up	Container arms Down		Description	ACCULTAGE BOX	CONTROL BOX	Emergency stop High sig	Emergency stop Low sig	Double lift Hydraulic valve	Buzzer reverse direction	Work light	Beacon	Work light/Reverse		Description	CONTROL BOX			Joke pos. up	Packer plate pos. out	Pressure sensor	Packer plate pos.(auto)	Joke pos.down	Packer plate pos. in										
T	Ī	T							90		ı	Ī	7	1	٦	8	Γ	Γ	8	8	ı	ľ	Γ		Γ	Γ	Г				l	Γ	T	T	Ī	T	T	T	Ī	1
No 10	101	1 (9)	z (10) DI	3 (11) DI	4 (12) DI	5 (13) DIV DO	6 (14) DIVDO	7 (15) DIVDO	8 (16) DI/DO	O,	١.	r	2	7	٦	٥	Г	Γ	٥	Г	Q.	L	¥	4	Γ	I.A.	Г	¥	ΑI	۱۸	l	r	t	t	t	t	t	t	t	l
Description N		_	icy stop Low sig	•		Start	9	Ravebar closed 7	Tailgate closed Right 8	Description	200	100	Radio		Radio	Radio 4	Radio	Radio	Radio 7	Radio	Description	BOX	1	2	3	4	9	9	4	8.										
S	2	5 6	٥	ō	₫	ī	ā	ā	ō	ç			AVK	AVK	AVR	AVRI	AVRI	AVRI	AVRI	AVRI	ç		ē	ā	ē	ō	ā	ī	ıa	IQ	l	L		L	L	L	L	L		
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											Description	CAB	Ejection plate in	Tailgate up	Ejection plate out	Tailgate down		Ovcle complete	Test A	Test B																						
											١		-		DI TK	DI TK	DI TK	DI TK	Z IX																							
												_	2	ŭ	3	_	۲	۲	١	٦	1																					
Γ	7	٦	1	1	8			Γ	П	١	٤	Q	-	5	9	4	ъ	9	1	80	1	İ	П			П			Γ	Γ	П		Γ	I	T	T	T	Τ	T	T	T	٦
Description	CAB	LED 4, Unloading mode	LED 5 F1, Bodyfunctions	LED 6 F2, Quiet	LED * Cleaning/Compaction	LED # R.H drive	LED Alam	Buzzer	LED Background light		Describtion	CAB	On/Off	Beacon	Work light	Unloading mode	F1; bodyfunctions from cab	F2. quiet	Cleaning	R.H drive		Described	BODYLH	Oil tevel	Oil temp.			Ejectionplate in/out				Description	TABLEATER	Dieffe Inform Loft	Dilling Open House				No september 1	Binnin Locking UK		
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Description	CAB							Tailgate speed	Eject comp speed		Description	CAB	Autolevel L.	Autolevel R	Any arm out	Bin stiff on L	Bin still on R	Auto internot L	Auto internot R		O constant	Description	BODY LH								8 (16) DI/DO Talgate open L	Description	TAIL CATE ! U	Contribo Lioh cional	Societo I our ricosi	Cofeby orm Loff	Bis Ok	Handle blotiff	rainie Dillin	GE am small	Ge altit talge	DIN arm
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ription	-	Emergency stop High sig 1	Emergency stop Low sig	Gear box / Brake OK	7	Footstep ok	Footstep max 30km/h	Revs. control	Power take off / Pump		uondu		Counter Cyclestart	Counter Shakings A	Counter Shakings B	Counter 4	Counter 5	Counter 6	Backpressure A		- Constitution		BODY LH	Emergency stop High 1	Em stop Low/Insp.door Let	Em.stop Low/Insp.door Ri	1		d	m 1		Description		Link cin	_	_	Sional				1	langate closed Left
g		ā	5	5	DVFI	OMO	00/10	00/10	OQAO	١	١		A	A	٧ı	¥	¥	¥	A	Ā] ,	2		ō	DI I	DI	Di O	ā	Ĭ	ă	DI	ç		ē	5 2	S &	5 2	5 8	5 2	5/2	5 6	5
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																					100	CONTROL BOX	Ejection plate out	Ejection plate in	9	down	¥		plate in	Packer plate out
																					Description	3	Ejection	Ejection	Tailgate up	Taligate down	Joke down	Joke up	Packer plate in	Packer
																					3		PWM		PWM	MW4	→ MWH	MWM		PWM
																					2	223	÷		2+	ż	3+	4	4+	4.
Description	TAILGATE R.H	Binlift Up/Down Right		Ravebar Up/Down			Binrim Locking OK			Description	CONTROL BOX	Bincatcher Out	Bincatcher In	DIN opener Out	DIN opener In	Bin lock Close Left	Bin lock Open Left	Bin lock Close Right	Bin lock Open Right			×	Binlift Up Left	Binlift Down left	Binlift Up Right	Binlift Down Right	Double lift Lock Out	Double lift Lock in		Ravebar Down
Q.		A	A	¥	ΑI	ΑI	ΑI	¥	ΑI	0/1		8	8	8	8	8	00	8	8	١,	2		MM	MMd	PWM	PWM	MMd	PWM	PWM	MMd
ş	1D16	Ę	2	3	4	2	9		8	۶	ID19	Ę	- 7	3	4	5	9				2	220	±	-1	5+	5-	3+	3	++	4.
Description	TAILGATE R.H	Footstep High signal	Footstep Low signal	Safety arm Right	Bir OK	Handle binlift	GE arm small	GE arm large	DIN arm	Description	CONTROL BOX	Emergency stop High slg	Emergency stop Low sig	Double lift Hydraulic valve	Buzzer reverse direction	Work light	Beacon	Work light/Reverse			Description	CONTROL BOX	Binlift position Left	Binlift position Right	Joke pos. up	Packer plate pos. out	Pressure sensor	Packer plate pos.(auto)	Joke pos.down	Packer plate pos. in
ο	١	ā	ā	ō	ō	5 (13) DI/DO	6 (14) DI/DO	7 (15) DI/DO	00/10	Q.		8	8	8	8	8	8	8	8	١,	2		7	ΑI	ΑI	¥	Ai	A	¥	ΑI
- 1	1015	1 (9)	2 (10) DI	3 (11) DI	4 (12) DI	5 (13)	6 (14)	7 (15)	8 (16) 01/00	No	1018	-	2	3	4	2	9	7	80		٤	22	-	2	3	4	9	9	_	8
Description	TAILGATE R.H	Emergency stop High sig	Emergency stop Low sig	Rescue	Signal	Start	Autogrip	Ravebar closed	Tailgate closed Right	Description	CONTROL BOX	Startup flag	Buttons reset	Lock start compaction	Buttons OK body	Parallel Left	Parallel Right	Birnim Lock Auto	Ejectioplate in by T.G. Don 8		Description	CONTROL BOX					Bincatcher in Left	Bincatcher In Right	DIN opener in Left	DIN opener in Right
Q		ō	ō	ō	ia	ō	ō	ō	ā	2		ΑO	Q Q	οĄ	VO	Q	VO	ΑO	ΑO		3		ŏ	ă	ī	ō	ō	ō	ō	io
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103470 Set 1

Cable list GEESINK GPM-III

Cable no Symbol Name Cable type 1.2 Y1-Y2 Ejection plate Out / In Valve cable prop. 3.4 Y3-Y4 Tailgate Up / Down Valve cable prop. 5.6 Y5-Y6 Joke Down / Up Valve cable prop. 7.8 Y7-Y8 Packer plate Out / In Valve cable prop. Valve cable prop. Valve cable prop. Valve cable prop. Y12 Valve cable prop. Y13 Valve cable prop. 14 Y14 Valve cable prop. Valve cable prop. 16 Y16 Valve cable prop. 17 Locking tailgate big MF300 Valve cable prop. Y18 Unlocking tailgate big MF300 Valve cable prop. 18 Valve cable prop. 19 Y19 20 Y20 Valve cable prop. Valve cable prop. 21 Y21 Valve cable prop. Valve cable prop. 24 Y24 Valve cable prop. 25 Valve cable prop. Valve cable prop. Valve cable prop. Valve cable prop. Y29 30 Y30 31 Y31 Valve cable Valve cable Valve cable 34 Y34 Valve cable 36 Y36 Valve cable 37 Valve cable Valve cable Y38 Valve cable 39 Bincatcher middle (big) Valve cable 40 Y40 41 Y41 Bincatcher out (big) Valve cable Bin catcher in (big) Valve cable 42 Y42 Bin locking on (big) Valve cable 43 Y43 44 Y44 Bin locking off (big) Valve cable Y45 Valve cable 45 Bin locking on (small) Valve cable 46 Y46 Bin locking off (small) Valve cable 47 Bin catcher out (small) 48 Y48 Bin catcher in (small) Valve cable Y49 Valve cable 49 Y50 On/Off (Dumpvalve) Valve cable 50 BIG FRACTION L.H

51	T1	Pressure sensor	Analogous prox. switch cable
52			•
53	G1(a)	Carriage plate position (up)	Analogous prox. switch cable
54	G1(b)	Carriage plate position (down)	
55	G2	Packer plate position (out)	Analogous prox. switch cable
56	G3	Packer plate position (in)	
57	G4	Packer plate position (auto)	
58	G6		
59	G7		
60	G8	HLL Door (closed)	Safety sensor
	G5	Tilt, Tailgate open	Internal
		SMALL FRACTION R.H	
61	T11	Pressure sensor (small)	Analogous prox. switch cable
62			
63	G11(a)	Carriage plate position (up)	Analogous prox. switch cable
64	G11(b)	Carriage plate position (down)	
65	G12	Packer plate position (out)	Analogous prox, switch cable
66	G13	Packer plate position (in)	
67	G14	Packer plate position (auto)	
68	G16		
69	G17		
70	G18		
	G15	Tilt, Tailgate open	Internal
		CONTROL BOX BIG L.H	
71	G21	Container sensor	Prox. Switch cable
72	G22(a)	Spillage panel	Prox. Switch cable
73	G23(a)	Footstep	Prox. Switch cable
74	G24(a)	Tailgate closed (locking crow)	Prox. Switch cable
75	G25(a)		
76	G26(a)	Auto. bin catcher	Prox. Switch cable
77	G27(a)	Bin locking	Prox. Switch cable
78	G28	Barrier down	Prox. Switch cable
79	G29	DIN-arm position	Prox. Switch cable
80	G30	Lift position	Prox. Switch cable
		CONTROL BOX SMALL R.H	-
81	G31	Container sensor	Prox. Switch cable
82	G32(a)	Spillage panel	Prox. Switch cable
83	G33(a)	Footstep	Prox. Switch cable
84	G34(a)	Tailgate closed (locking crow)	Prox. Switch cable
85	G35(a)		
86	G36(a)	Auto, bin catcher	Prox. Switch cable
87	G37(a)	Bin locking	Prox. Switch cable
88	G38	Barrier down	Prox. Switch cable
89	G39	DIN-arm position	Prox. Switch cable
90	G40	Lift position	Prox. Switch cable
		CONTROL BOX BODY	
91	G41	Inspection door L.H	Prox. Switch cable
92	G42	Inspection door R.H	Prox. Switch cable
93	G43	Level sensor	Prox. Switch cable
94	G44	Temp. Sensor	Prox. Switch cable
95	G45		
96	G46		

97	G47		
98	G48		
99	G49		
100	C1	Supervision camera CCTV	Camera cable
		LIGHTING ELECTRIC BOXES	
101		Number plate light L.H	Ölflex 2x1
102		Number plate light R.H	Ölflex 2x1
103		Beacon L.H	Ölflex 2x1
104		Beacon R.H/Small	Ölflex 2x1
105		Work light L.H	Ölflex 2x1
106		Work light R.H	Ölflex 2x1
107		Work light Extra L.H/Small	Ölflex 2x1
108		Work light Extra R.H/Small	Ölflex 2x1
109		Work light Extra L.H/External	Ölflex 2x1
110		Work light Extra R.H/External	Ölflex 2x1
200		Flash light R.H	Ölflex 2x1
201		Flash light L.H	Ölflex 2x1
		LIGHTING CONTROL BOX BIG (L.H)	
111		Stop tail lamp	Ölflex 8x1
112		Upper stop tall lamp	Ölflex 5x1
113		Side marker light	Ölflex 2x1
114		Extra reverse light	Ölflex 2x1
115			
116			
117			
118			
119			
120			
		LIGHTING CONTROL BOX SMALL (R.H)	
121		Stop tail lamp	Ölflex 8x1
122		Upper stop tail lamp	Ölflex 5x1
123		Side marker light	Ölflex 2x1
124		Extra reverse light	Ölflex 2x1
125			
126			
127			
128			
129			
130			
		LIGHTING CONTROL BODY	
141		Side marker light L.H	Ölflex 2x1
142		Side marker light R.H	Ölflex 2x1
143		Beacon L.H	Ölflex 2x1
144		Beacon R.H	Ölflex 2x1
145		Extra reverse lamp/work light L.H	Ölflex 2x1
146		Extra reverse lamp/work light R.H	Ölflex 2x1
147		Extra connection cable (R98) R L work light	Ölflex 2x1
148			
149			
150	F1	Fan	2x1,5 To junction box
		EXTRA FUNCTIONS (L.H)	D 0. 11-1 11-
151	G51	Brace	Prox. Switch cable

152	T		
153	 		
154		· · · · · · · · · · · · · · · · · · ·	
155	 		
156	 		<u> </u>
157	 		
158	G58	DIN-block up	Prox. Switch cable
159	G59	DIN-block up	Prox. Switch cable
160	G60	DIN-arm position	Prox. Switch cable
160	G60	EXTRA FUNCTIONS (R.H)	Prox. Switch cable
404	204		D
161	G61	Brace	Prox. Switch cable
162			
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164			
165		***************************************	<u> </u>
166			<u> </u>
167			
168	G68	DIN-block up	Prox. Switch cable
169	G69	DIN-arm in	Prox. Switch cable
170	G70	DIN-arm position	Prox. Switch cable
		CONTROL BOX BIG (L.H)	
171			
172	G22(b)	Spillage panel	
173	G23(b)	Footstep	
174	G24(b)	Tailgate closed (locking crow)	
175	 		
176	G26(b)	Auto. bin grip	
177	G27(b)	Bin locking	
178			
179	t		
180	G30(b)	Lift position	
-100	- COO(D)	CONTROL BOX SMALL (R.H)	
181	-	CONTROL BOX SMALE (R.II)	
182	G32(b)	Spillage panel	
183	G32(b)	Footstep	
	G34(b)	Tailgate closed (locking crow)	
184	G34(D)	raligate closed (locking crow)	
185	1 200(1)		
186	G36(b)	Auto. bin grip	
187	G37(b)	Bin locking	
188			
189			
190	G40(b)	Lift position	
		EXTRA FUNCTIONS	
191	Y191	Winsch (R.H) in	Valve cable
192	Y192	Winsch (R.H) out	Valve cable
193	Y193	Winsch (L.H) in	Valve cable
194	Y194	Winsch (L.H) out	Valve cable
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F. de Wolf 10/1/2003

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103470 Set 1

Cable list GEESINK GPM-III Revision: 0

Cable no.	Symbol	Name	Cable type
1.2	Y1-Y2	Ejection plate Out / In	Valve cable prop.
3.4	Y3-Y4	Tailgate Up / Down	Valve cable prop.
5.6	Y5-Y6	Joke Down / Up	Valve cable prop.
7.8	Y7-Y8	Packer plate Out / In	Valve cable prop.
9	Y9	Shaker unlocked	Valve cable prop.
10	Y10	Shaker locked	Valve cable prop.
11	Y11	Winch in	Valve cable prop.
12	Y12	Winch out	Valve cable prop.
13	Y13	Bin lift up (split L.H)	Valve cable prop.
14	Y14	Bin lift down (spllt L.H)	Valve cable prop.
15	Y15	Bin lift up split R.H/small	Valve cable prop.
16	Y16	Bin lift down spllt R.H/small	Valve cable prop.
17	Y17	Locking tailgate big MF300	Valve cable prop.
18	Y18	Unlocking tailgate blg MF300	Valve cable prop.
19	Y19	Locking tailgate small MF300	Valve cable prop.
20	Y20	Unlocking tailgate small MF300	Valve cable prop.
21	Y21	Ejection plate out small	Valve cable prop.
22	Y22	Ejection plate in small	Valve cable prop.
23	Y23	Tailgate up small	Valve cable prop.
24	Y24	Tailgate down small	Valve cable prop.
25	Y25	Carriage plate down small	Valve cable prop.
26	Y26	Carriage plate up small	Valve cable prop.
27	Y27	Packer plate in small	Valve cable prop.
28	Y28	Packer plate out small	Valve cable prop.
29	Y29		
30	Y30		
31	Y31		
32	Y32	Parallell valve	Valve cable
33	Y33	Lift locking on	Valve cable
34	Y34	Lift locking off	Valve cable
35	Y35	On/Off Valve Bin lift	Valve cable
36	Y36	Brace On Left	Valve cable
37	Y37	Brace Off Left	Valve cable
38	Y38	Brace On Right	Valve cable
39	Y39	Brace Off Right	Valve cable
40	Y40	Bincatcher mlddle (big)	Valve cable
41	Y41	Bincatcher out (big)	Valve cable
42	Y42	Bin catcher in (big)	Valve cable
43	Y43	Bin locking on (big)	Valve cable
44	Y44	Bln locking off (big)	Valve cable
45	Y45	Bin locking on (small)	Valve cable
46	Y46	Bin locking off (small)	Valve cable
47	Y47	Bin catcher out (small)	Valve cable
48	Y48	Bin catcher in (small)	Valve cable
49	Y49	Bin catcher middle (small)	Valve cable
50	Y50	On/Off (Dumpvalve)	Valve cable
·	1	BIG FRACTION L.H	

51	T1	Pressure sensor	Analogous prox. switch cable
52			
53	G1(a)	Carriage plate position (up)	Analogous prox. switch cable
54	G1(b)	Carriage plate position (down)	
55	G2	Packer plate position (out)	Analogous prox. switch cable
56	G3	Packer plate position (in)	
57	G4	Packer plate position (auto)	
58	G6		
59	G7		
60	G8	HLL Door (closed)	Safety sensor
	G5	Tilt, Tailgate open	Internal
	2	SMALL FRACTION R.H	
61	T11	Pressure sensor (small)	Analogous prox. switch cable
62			
63	G11(a)	Carriage plate position (up)	Analogous prox. switch cable
64	G11(b)	Carriage plate position (down)	
65	G12	Packer plate position (out)	Analogous prox. switch cable
66	G13	Packer plate position (in)	· ·
67	G14	Packer plate position (auto)	
68	G16		
69	G17		
70	G18		
	G15	Tilt, Tailgate open	Internal
		CONTROL BOX BIG L.H	
71	G21	Container sensor	Prox. Switch cable
72	G22(a)	Spillage panel	Prox. Switch cable
73	G23(a)	Footstep	Prox. Switch cable
74	G24(a)	Tailgate closed (locking crow)	Prox. Switch cable
75	G25(a)		
76	G26(a)	Auto. bin catcher	Prox. Switch cable
77	G27(a)	Bin locking	Prox. Switch cable
78	G28	Barrier down	Prox. Switch cable
79	G29	DIN-arm position	Prox. Switch cable
80	G30	Lift position	Prox. Switch cable
		CONTROL BOX SMALL R.H	
81	G31	Container sensor	Prox. Switch cable
82	G32(a)	Spillage panel	Prox. Switch cable
83	G33(a)	Footstep	Prox. Switch cable
84	G34(a)	Tailgate closed (locking crow)	Prox. Switch cable
85	G35(a)	•	
86	G36(a)	Auto. bin catcher	Prox. Switch cable
87	G37(a)	Bin locking	Prox. Switch cable
88	G38	Barrier down	Prox. Switch cable
89	G39	DIN-arm position	Prox. Switch cable
90	G40	Lift position	Prox. Switch cable
		CONTROL BOX BODY	
91	G41	Inspection door L.H	Prox. Switch cable
92	G42	Inspection door R.H	Prox. Switch cable
93	G43	Level sensor	Prox. Switch cable
94	G44	Temp. Sensor	Prox. Switch cable
95	G45		
96	G46		

97	G47		1
98	G48		
99	G49		
100	C1	Supervision camera CCTV	Camera cable
		LIGHTING ELECTRIC BOXES	
101		Number plate light L.H	Ölflex 2x1
102		Number plate light R.H	Ölflex 2x1
103		Beacon L.H	Ölflex 2x1
104		Beacon R.H/Small	Ölflex 2x1
105		Work light L.H	Ölflex 2x1
106		Work light R.H	Ölflex 2x1
107		Work light Extra L.H/Small	Ölflex 2x1
108	1	Work light Extra R.H/Small	Ölflex 2x1
109		Work light Extra L.H/External	Ölflex 2x1
110		Work light Extra R.H/External	Ölflex 2x1
200		Flash light R.H	Ölflex 2x1
201		Flash light L.H	Ölflex 2x1
		LIGHTING CONTROL BOX BIG (L.H)	
111		Stop tail lamp	Ölflex 8x1
112		Upper stop tail lamp	Ölflex 5x1
113		Side marker light	Ölflex 2x1
114		Extra reverse light	Ölflex 2x1
115			
116			
117			
118			
119			
120			
		LIGHTING CONTROL BOX SMALL (R.H)	
121		Stop tail lamp	Ölflex 8x1
122		Upper stop tail lamp	Ölflex 5x1
123		Side marker light	Ölflex 2x1
124		Extra reverse light	Ölflex 2x1
125			
126			
127			
128			
129			
130			
		LIGHTING CONTROL BODY	
141		Side marker light L.H	Ölflex 2x1
142		Side marker light R.H	Ölflex 2x1
143		Beacon L.H	Ölflex 2x1
144		Beacon R.H	Ölflex 2x1
145		Extra reverse lamp/work light L.H	Ölflex 2x1
146		Extra reverse lamp/work light R.H	Ölflex 2x1
147		Extra connection cable (R98) R L work light	Ölflex 2x1
148	1		
149	1		
150	F1	Fan	2x1,5 To junction box
	1	EXTRA FUNCTIONS (L.H)	
151	G51	Brace	Prox. Switch cable

152			1
153			
154			
155			
156			
157			
158	G58	DIN-block up	Prox. Switch cable
159	G59	DIN-arm In	Prox. Switch cable
160	G60	DIN-arm position	Prox. Switch cable
100		EXTRA FUNCTIONS (R.H)	
161	G61	Brace	Prox. Switch cable
162	1	5.000	
163			
164	 		
165	 		
166	 		
167			
168	G68	DIN-block up	Prox. Switch cable
169	G69	DIN-arm in	Prox. Switch cable
170	G70	DIN-arm position	Prox. Switch cable
170	1 670	CONTROL BOX BIG (L.H)	11000 0111011 0111
171		CONTROL BOX BIO (E.II)	
172	G22(b)	Spillage panel	
173	G23(b)	Footstep	
174	G24(b)	Tailgate closed (locking crow)	
175	G24(b)	raligate closed (locking crow)	
176	G26(b)	Auto. bin grip	
177	G27(b)	Bin locking	
178	G27(b)	Bill looking	
179			ļ
180	G30(b)	Lift position	
100	G30(b)	CONTROL BOX SMALL (R.H)	
181	 	CONTROL BOX SMALL (R.H)	
182	G32(b)	Spillage panel	
183	G32(b)	Footstep	
184	G34(b)	Tailgate closed (locking crow)	
185	G34(b)	rangate closed (locking crow)	
186	G36(b)	Auto. bin grip	
187	G37(b)	Bin locking	
188	G37(b)	Bill locking	
189			
190	G40(b)	Lift position	
190	G40(b)	EXTRA FUNCTIONS	ļ
101	1 1/404	Winsch (R.H) in	Valve cable
191	Y191	Winsch (R.H) in	Valve cable
192	Y192	Winsch (R.H) out Winsch (L.H) in	Valve cable Valve cable
193	Y193	Winsch (L.H) in Winsch (L.H) out	Valve cable
194	Y194	Winscri (L.H) out	valve cable
			+
			

L	Length
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1348	ю	SEQUENC	E TA	MAIN WIRING HARNES	
0	Pin	Colour	Size	Description	Plinth
	X1		***************************************	CAB	CIRCUIT BOARD
***************************************	IA	White	11.5	T+ (24VDC)	11,+in
2	tB .	Black	2.5	Minus (0VDC)	GND (PL1)
3	В	Blue	1.5	B+ Beacon	12,+uP,PL18:11,PL18:21
4	lo	Brown	2.5	B+ Work light	13.PL12:11.PL12:21.PL27:1
5	ilE .	Grev	1.5	T+/B+ Extra	14 (PL24)
6	F	Red	1.5	B+ Extra/Fan	15,PL26:11
	G	Purple	0.75	CAN L	CAN L
8	H	Pink	0.75	CAN H	CAN H
	J	Orange	0.75	Foolboard	2 (PL19)
	ik -	Transp	0.75	Reserve	16 (PL23)
	TL.	Yellow	1.5	NS +in	S13 (PL20)
12	M	8lue/White	0.75	Reserve	18 (PL22)
	X1		***************************************	CHASSIS FRAME	CIRCUIT BOARD
13	IN	Brown/White	0.75	Stop tail lamp R	27 (PL25)
	IP	Grev/Black	0.75	Reverse light	29 (PL25)
	İR	Black/White	0.75	Stop tail lamp L	19 (PL23)
	318	Red/White	0.75	Fog lamp	28 (PL25)
	717	Purple/White	0.75	Plate light	30 (PL25)
	NU T	Orange/White	0.75	Flash L.H	25 (PL24)
	įν	Yellow/White	0.75	Pos. Light L.H	23 (PL24)
	W	Orange/Black	0.75	Flasht R.H	26 (PL24)
	X	Yellow/White	0.75	Pos.Light R.H	24 (PL24)
	2 7	Biack	2.5	Minus (0VDC), light	GND (PL7)
	Z	Black	2.5	Minus (0VDC)	GND (PL1)
	X1			BODY	CIRCUIT BOARD
24	4 a	TWhite Twhite	0.75	T+ (24VDC)	I+Out (PL8)
	5 6	Black	11.5	Minus (0VDC)	GND (PL9)
	5 0	Biue/Black	0.75	Beacon	7
	7 0	Brown/Black	0.75	Work light/Reverse light	PL27:14
	3 8	Green/Black	0.75	Reserve	PL27:24
	917	Red/Black	0.75	Reserve	8
	ole -	Purple/Black	0.75	CAN L	CAN L
	1 h	Blue/Red	0.75	CAN H	ÇAN H
3	21	Blue/Green	0.75	*(Reserve)	21
	311	Brown/Green	0.75	*(Reserve)	21 22
	4 k	Yellow/Red	0.75	Pos.light L.H	23
	5 m	Yellow/Blue (Yellow/Purple)			24

35 m Yellow/Blue (Yellow/Purple) | 0.75 | Pos.light R.H. NOTEI *(Reserve)-labelled will not be connected

)	Pin	Colour	Size	Description	Plinth
	X2	***************************************		LEFT	CIRCUIT BOARD
	11A	White	11	T+ (24VDC)	+Out (PL8)
	218	Black	11	Minus (0VDC)	GND (PL9)
*******	31C	Blue	1	Flash L.H	25 (PL24)
	4ID	Brown	1	Stop tail lamp L	19 (PL23)
	5E	Grey	1	Reverse light	29 (PL25)

6	F	Red	1	Fog light	28 (PL25)
	G	Purple	1	CAN L	CAN L
8	Н	Pink	1	CAN H	CAN H
9	J	Orange	1	Foolboard	>>> (diod) 2 (PL19)
10	K	Transp	1	Reserve	
11	L	Yellow	1	Return	3 (PL19)
12	М	Blue/White	1	Pos.light L.H	23 (PL24)
	Х3			RIGHT	CIRCUIT BOARD
1	Α	White	1	T+ (24VDC)	+Out (PL8)
2	В	Black	1	Minus (0VDC)	GND (PL9)
3	С	Blue	1	Flash R.H	26 (PL24)
4	D	Brown	1	Stop tail lamp R	27 (PL25)
		Grey	1	Reverse light	29 (PL25)
6	F	Red	1	Fog light	28 (PL25)
		Purple	1	CAN L	CAN L
8	Н	Pink	1	CAN H	CAN H
	J	Orange	1	Foolboard	>>> (diod) 2 (PL19)
10		Transp	1	Reserve	
11		Yellow	1	Return	3 (PL19)
12	М	Blue/White	1	Pos.light R.H	24 (PL24)
				LIGHTING CABLES	
No	Pin	Colour	Size	Description	Plinth
					ALMALUM DALINA
				ELECTRIC BOX	CIRCUIT BOARD
101	T	IWhite	11	Number plate light L.H	30 (PL25)
101		White Black	1		
					30 (PL25)
101		Black White	1	Number plate light L.H	30 (PL25) GND (PL7)
		Black	1	Number plate light L.H	30 (PL25) GND (PL7) 30 (PL25)
102		Black White Black	1 1	Number plate light L.H Number plate light R.H	30 (PL25) GND (PL7) 30 (PL25) GND (PL7)
102		Black White Black White	1 1 1 1	Number plate light L.H Number plate light R.H	30 (PL25) GND (PL7) 30 (PL25) GND (PL7) 7
102		Black White Black White Black	1 1 1 1	Number plate light L.H Number plate light R.H Beacon L.H	30 (PL25) GND (PL7) 30 (PL25) GND (PL7) 7 GND (PL7)
102		Black White Black White Black White Black White	1 1 1 1 1 1 1 1 1	Number plate light L.H Number plate light R.H Beacon L.H	30 (PL25) GND (PL7) 30 (PL25) GND (PL7) 7 GND (PL7) 8
102 103 104		Black White Black White Black White Black Write Svart	1 1 1 1 1 1	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H	30 (PL25) GND (PL7) 30 (PL25) GND (PL7) 7 GND (PL7) 8 GND (PL7)
102 103 104		Black White Black White Black White Svart White	1 1 1 1 1 1 1	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H	30 (PL25) GND (PL7) 30 (PL25) GND (PL7) 7 GND (PL7) 8 GND (PL7) 5
102 103 104 105		Black White Black White Black White Black White Svart White Black	1 1 1 1 1 1 1 1 1	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H Work light L.H	30 (PL25) GND (PL7) 30 (PL25) GND (PL7) 7 GND (PL7) 8 GND (PL7) 5 GND (PL7)
102 103 104 105		Black White Black White Black White Black White Svart White Black White White	1 1 1 1 1 1 1 1 1 1	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H Work light L.H	30 (PL25) GND (PL7) 30 (PL25) GND (PL7) 7 GND (PL7) 8 GND (PL7) 5 GND (PL7) 6
102 103 104 105		Black White Black White Black White Suart White Black White Black White Black White	1 1 1 1 1 1 1 1 1 1 1	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H Work light L.H Work light R.H	39 (PL2S) GND (PL7) 30 (PL2S) GND (PL7) 7 GND (PL7) 8 GND (PL7) 6 GND (PL7) 6 GND (PL7) 6 GND (PL7)
102 103 104 105		Black White Black White Black White Syart White Syart White Black White Black White Black White	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H Work light L.H Work light R.H	30 (PL25) GND (PL7) 30 (PL25) GND (PL7) 7 GND (PL7) 8 GND (PL7) 5 GND (PL7) 6 GND (PL7) 6 GND (PL7)
102 103 104 105 106		Black White Black White Black White Slack White Slack White Svart White Black White Black White Black White Black	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H Work light L.H Work light L.H Work light L.H inner	30 (PL25) GND (PL7) 30 (PL25) GND (PL7) 7 GND (PL7) 8 GND (PL7) 5 GND (PL7) 6 GND (PL7) 5 GND (PL7)
102 103 104 105 106		Black White Black White Black White Black White Black White Black White Black White Black White Black White Black White Black White	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H Work light L.H Work light L.H Work light L.H inner	30 (PL25)
102 103 104 105 106 107		Black White Black White Black White Black White Start White Black White Black White Black White Black White Start White Start White Start White Start Start Start White Start White Start White Start White Start White Start	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H Work light L.H Work light R.H Work light R.H inner	30 (PL25) GND (PL7) 30 (PL25) GND (PL7) 7 GND (PL7) 8 GND (PL7) 5 GND (PL7) 6 GND (PL7) 5 GND (PL7) 5 GND (PL7)
102 103 104 105 106 107		Black White Black White Slack White Slack White Svart White Black White Black White Black White Stack White White White Slack White Slack White Svart White	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H Work light L.H Work light R.H Work light R.H inner	30 (PL2S) GND (PL7) 30 (PL25) GND (PL7) 7 GND (PL7) 8 GND (PL7) 5 GND (PL7) 6 GND (PL7) 6 GND (PL7) 6 GND (PL7) 6 GND (PL7) 5 GND (PL7) 5 GND (PL7) 5 GND (PL7) 5 GND (PL7) 5 GND (PL7) 5 GND (PL7) 5 GND (PL7) 5
102 103 104 105 106 107 108		Black White Black White Black White Black White Slack White Black	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H Work light L.H Work light R.H Work light R.H Work light L.H inner Work light R.H inner	30 (PL25) GND (PL7) 30 (PL25) GND (PL7) 7 GND (PL7) 8 GND (PL7) 5 GND (PL7) 6 GND (PL7) 5 GND (PL7) 6 GND (PL7) 6 GND (PL7) 6 GND (PL7)
102 103 104 105 106 107 108		Black White Black White Black White Slack White Slack White Black	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H Work light L.H Work light R.H Work light R.H Work light L.H inner Work light R.H inner	30 (PL2S) GND (PL7) 30 (PL2S) GND (PL7) 7 GND (PL7) 8 GND (PL7) 5 GND (PL7) 6 GND (PL7) 6 GND (PL7) 6 GND (PL7) 6 GND (PL7) 5 GND (PL7) 6 GND (PL7) 6 GND (PL7) 6 GND (PL7) 6 GND (PL7) 6
102 103 104 105 106 107 108		Black White Black White Black White Slack White Slack White Black	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H Work light L.H Work light L.H Work light L.H Work light L.H inner Work light R.H inner Work light R.H outer	30 (PL25) GND (PL7) 30 (PL25) GND (PL7) 7 GND (PL7) 8 8 GND (PL7) 5 GND (PL7) 6 GND (PL7) 7 8 9
102 103 104 105 106 107 108 109		Black White Black White Black White Black White Black White Black White Black White Black White Black White Black White Black White Black White Black White Black White Black White Black	11 11 11 11 11 11 11 11 11 11 11 11 11	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H Work light L.H Work light R.H Work light L.H inner Work light L.H inner Work light L.H outer Work light R.H outer	30 (PL25) GND (PL7) 30 (PL25) GND (PL7) 7 GND (PL7) 8 GND (PL7) 5 GND (PL7) 6 GND (PL7) 5 GND (PL7) 5 GND (PL7) 5 GND (PL7) 5 GND (PL7) 6 GND (PL7) CIRCUIT BOARD
102 103 104 105 106 107 108 109		Black White Black White Black White Black White Slack White Black White Syart White Syart White Black White Syart White Black White Black	11 11 11 11 11 11 11 11 11 11 11	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H Work light L.H Work light L.H Work light L.H inner Work light L.H inner Work light L.H inner Work light L.H outer Work light R.H outer CONTROL BOX Pos.light	30 (PL2S)
102 103 104 105 106 107 108 109		Black White Black White Black White Slack White Slack White Black Black White Black Black White Black	11 11 11 11 11 11 11 11 11 11 11 11 11	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H Work light L.H Work light R.H Work light L.H inner Work light L.H inner Work light R.H outer CONTROL BOX Pos.light Minus	30 (PL25) GND (PL7) 30 (PL25) GND (PL7) 7 GND (PL7) 8 GND (PL7) 5 GND (PL7) 6 GND (PL7) 7 8 GND (PL7) 9 1 1 GND (GND (GND (GND (GND (GND (GND (GND
102 103 104 105 106 107 108 109		Black White Black White Black White Black White Black White Black White Black White Black White Black White Black White Black White Black White Black White Black White Svart White Black White Black White Black White Black	11 11 11 11 11 11 11 11 11 11 11 11 11	Number plate light L.H Number plate light R.H Beacon L.H Beacon R.H Work light L.H Work light L.H Work light L.H inner Work light L.H inner Work light R.H outer CONTROL BOX Pos.light Minus Flash	30 (PL2S)

			PROXIMITY SWIT	CH CABLES
Vo P	n Ço	lour	Size Description	Plinih
				CIRCUIT BOARD
51	1 Bro	own	Pressure sensors	+Out (PL8)
	2 W	nite		Al5
	3 Blu	ie .		GND (PL10)
	4 Bla	ack		
53	1 Bro	own	Carriage plate	10V (PL10)
	2 Wh	hite		Al3
	3 Blu	Je .		GND (PL10)
	4 Bia	eck		
55	1 Bro	own	Packer plate out	+Out
	2 W			
	3 Blu	Je		GND (PL10)
	4 Bla	sck		Al4 in serie with 100k
56	1 Bro	own	Packer plate in	+Out
	2 Wi			
	3 Blu	le .		GND (PL10)
	4 Bla	ack		Al8 in serie with 100k
57	1 Bro	own	Packer plate out	+Out
	2 W	hite		
	3 Blu			GND (PL10)
	4 Bla	ack		Al6 In serie with 100k

Pi	n Colour	Size	Description	Plinth
				CIRCUIT BOARD
77	White		Ejection plate out	G2:1A+
	Black			G2:1A-
-2	White		Ejection plate in	G2:18+
	Black			G2:18-
3	White		Tailgate up	G2:2A+
	Black			G2:2A-
4	White		Tailgate down	G2:28+
	Black			G2:28-
5	White		Carrige plate down	G2:3A+
-	Black			G2:3A-
6	While		Carriage plate up	G2:38+
	Black			G2:3B-
7	White		Packer plate in	G2:4A+
	Black			G2:4A-
8	White		Packer plate out	G2:48+
_	Black			G2:48-
13	White		Bin lift up L.H	G1:1A+
	Black			G1:1A-
14	White		Bin lift down L.H	G1:18+
	Black			G1:18-
15	White		Bin lift up R.H	G1:2A+
	Biack			G1:2A-
16	White		Bin IIft down R.H	G1:2B+

		Black			G1:2B-
50		White		On/Off	4
		Black			GND (PL1)
43	1	Brown		Bin locking on L.H	G2:DO5
	 	Blue			GND (PL1)
44		Brown		Bin locking off L.H	G2:DO6
		Blue		l	GND (PL1)
45		Brown		Bin locking on R.H	G2:D07
		Blue			GND (PL1)
46	1	Brown		Bin locking off R.H	G2:DO8
	$\overline{}$	Blue			GND (PL1)
151	1	White	2x1,5	Fan	PL26:14
		Black			GND (PL1)
				INTERNAL CONNECT	
Vo	Pin	Colour	Size	Description	Plinth
					KRETSKORT
31		Red		NSH	T12,G1:001
)2		Red		NSL	T14,G1:D02
23		Red		NSRESET	+Out,T34
019-0	20	Red		NS+Out	\$14,+G1,+G2,+DO G2,
010		Red		DO+Out	+Out,+DO G1
		Red		Titt	In, +Out (PL1)
011		Red		Titt	Out, DI1
012	1	Red		Emergency stop OK	S14,DI2
014	T	Red		Reverse signal	29,DI4
023	1	Red		Return	3 >>>(Diod)G2:3B+
024		Red		On/Off	\$14 >>>(Diod)4
**********	1			On/Off	3 >>>(Diod) 4 (PL19)
05	1	Red		Work light	Pt.12:A1,G1:D05
025	1	Red		Work light	PL12:14,5
026	1	Red		Work light	PL12:24:6
06	1	Red		Beacon	PL18:A1,G1:DO6
027	1	Red		Beacon	PL18:14.7
028	1	Red		Beacon	PL18:24:8
07		Red		Work light/Back	PL27:A1a,A1b,G1:DO7
08	T	Red		Fan	PL26:A1a,G1:008
	1	Black		Fan	PL26:A2,GND(PL1)
	1	Red/White		Backsummer	G1 D04
	1	Black/White		Backsummer	GND (PL7)
	7			Extra relay	PL27:A2, GND (PL7)



1		White
2	В	Black
3	С	Blue
4	D	Brown
5	E	Grey
6	F	Red
7	G	Purple
	Н	Pink
11	L	Yellow
9	J	Orange
10		Transparent
12	М	Blue/White



